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ABSTRACT

Since 1967, the Utah State Office of Education has compiled and reported pertinent information concerning statewide student performance. This report, the sixth in the "How Good Are Utah Public Schools?" series, summarizes results from a variety of ongoing and special studies. Since 1975, statewide assessment programs have encompassed both academic and nonacademic performance measures for representative samples of nearly 8,000 fifth and eleventh graders every three years, in approximately 100 schools. The introduction to the study explains the development of quality indicators in the context of educational reform and Utah's educational goals. The next five sections compare Utah students' performance on the American College Testing Program (ACT), the Scholastic Aptitude Test, the preliminary Scholastic Aptitude Test, the Comprehensive Tests of Basic Skills, and the Advanced Placement Program with national norms. Section VII discusses adult educational attainment for Utah, and Section VIII profiles courses taken by Utah senior high school students. Section IX discusses National Assessment of Educational Progress data, comparing Utah students' performance to national and international trends. Section X presents an overview of findings from each of the preceding sections. The summary and conclusions provide additional perspectives on performance trends and their implications. Discussion is supported throughout with numerous "exhibits." (MLH)

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UTAH EDUCATIONAL QUALITY INDICATORS

The Sixth in the Report Series:
"How Good are Utah Public Schools"

UTAH STATE OFFICE OF EDUCATION

Bernarr S. Furse
Superintendent of Public Instruction

Robert L. Leake, Associate Superintendent,
The Office of Planning and External Relations

David E. Nelson, Director
Evaluation and Assessment Section

by

David E. Nelson

January 1986

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FOREWORD

Since 1967 the Utah State Office of Education has sought to compile and report pertinent information in respect to student performance statewide. This effort has taken the form of six reports in the "How Good Are Utah Public Schools" series and four major Statewide Educational Assessments. It is the conviction of the Board and the State Office of Education that measurement of student achievement and other qualities is crucial as a basis for making progressive changes in the educational system.

This report, which is the sixth in the "How Good Are Utah Public Schools" series, summarizes the results from a variety of ongoing and special studies. These studies, taken together, provide a useful index of the performance of the Utah elementary and secondary public education system. A particular effort was made to document trends in student performance.

This report series, in conjunction with Utah's ongoing Statewide Educational Assessment program, represents a significant Utah attempt to document both the achievement of Utah students in basic skills areas and other important student learnings and characteristics.

Utah Educational Quality Indicators was prepared under the general direction of Dr. Robert Leake, Associate Superintendent, Office of Planning and External Relations. The author of the report was Dr. David E. Nelson.



Bernarr S. Furse
State Superintendent of Public Instruction

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The successful completion of a report of the magnitude of Utah Educational Quality Indicators would not be possible without the excellent assistance and cooperation of many individuals and organizations. Outside the Utah State Office of Education, several organizations and individuals were extremely helpful in providing information which aided in the preparation of this report. Mark Ruger of the American College Testing program provided his usual excellent assistance in making available ACT information. Debra Von Bargan of the College Board provided fine service in supplying Scholastic Aptitude Test, Preliminary Scholastic Aptitude Test, and Advanced Placement program results. Various staff members of the National Assessment of Educational Progress have been extremely helpful over many years in providing NAEP resource materials. Jim Robson of the State Data Center was most helpful in locating and analyzing appropriate census data for the report.

Within the State Office of Education many staff members were instrumental in helping produce this report. Lee Gray of the Office of Curriculum and Instruction did a superior job in preparing the cover and exhibits for the report. Sharon Murdock and the publications staff provided a fine quality printing job for the report.

In the Office of Planning and External Relations, several staff members deserve a special thanks. Dr. Robert Leake provided helpful suggestions on the content of the report. Barbara Banks and Nola Miller assisted in many aspects of the report ranging from data analysis to critiquing drafts. Finally, Laraine Broschinsky worked her typical miracles in producing a truly excellent typed manuscript.

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INTRODUCTION

For nearly twenty years, the State Office of Education has been systematically monitoring the academic performance and other characteristics of Utah students. This program began with the first report in this series, How Good Are Utah Public Schools, published in 1967. The present report is the sixth in that series and, as with previous reports, the purpose of this volume is to examine a variety of indicators which describe the quality of education in Utah's public schools. The focus in Quality Indicators is on the outcomes of education -- the knowledges, attitudes, and skills which students acquire. Quality Indicators reports the results of various testing programs and sources of information to provide a broad picture of student academic performance and other school-relevant characteristics.

In 1975 under the leadership of the State Board of Education and with a statement of legislative intent, Utah initiated a comprehensive program of statewide educational assessment. This program, which uses scientifically drawn, representative samples of schools and students, gauges the performance of nearly 8,000 Utah fifth and eleventh graders in approximately 100 schools every three years. Statewide assessment encompasses a wide variety of both academic and non-academic measures of student performance. A summary of state assessment findings is included in the present edition of Quality Indicators.

These two compatible, but methodologically different, approaches to examining the performance of Utah students together yield an important perspective on the performance of Utah elementary and secondary schools. This perspective includes the traditional academic areas and other important areas of educational focus such as student academic self-concept, attitude

toward school, the arts, and other areas which are not measured by traditional, basic skills-focused assessment programs.

The emphasis in the Quality Indicators series is on the examination of trends in the way Utah students score on the many measures reported in this volume. Certainly no one source of information reported here is by itself an adequate index of the total performance of Utah's public educational system. Taken together, however, the results reported provide a rather comprehensive picture of how the performance of Utah students today compares with that of the past, as well as how present levels of performance in the state compare with those nationally.

Quality Indicators in the Context of Educational Reform

In the Spring of 1983, educators, policy makers, and the public read with great concern the findings of a report commissioned by the U.S. Department of Education entitled, "A Nation at Risk." The report stimulated a wave of activity in the national educational community. The almost uniformly negative observations on the status of American education, along with an ambitious agenda for remediating observed problems, spawned a flurry of activity ranging from the production of similar reports by scores of groups and individuals to concrete policy and program initiatives in virtually every state and school district in the land.

Utah's response to what has come to be known as the educational reform movement was both strong and systematic. Initially, the State Office of Education examined the national findings contained in "A Nation at Risk" against the status of education in Utah (Nelson, 1983). This analysis showed that the national generalizations in "A Nation at Risk" were accurate for the state of Utah in some instances, but not others. This and other similar

analyses set the stage for the work of two high level commissions to study in-depth the status of public education in the state and make pertinent recommendations. The Utah State Board of Education established the Utah Commission on Educational Excellence, which issued a wide-ranging report calling for educational reform initiatives in the three basic areas of retaining and rewarding superior teachers, restructuring of the school curriculum, and using time more effectively in the schools. (Report of the Utah Commission on Educational Excellence, 1983)

Yet another major Utah effort was the work of the Governor's Education Reform Steering Committee. In their 1983 report, Education in Utah: A Call To Action, the Governor's Utah Education Reform Committee addressed many of the same issues which were identified in the work of the State Board of Education's Commission. The reform steering committee report also featured a rather thorough analysis and related recommendations in the area of adequate financing of education.

Approximately two years after the issuance of many national reports and the two major Utah efforts described above, policy makers and educators in the state of Utah have set in place numerous major reform efforts. This includes significant actions by the State Board of Education, the Legislature, local school districts, schools, and individual teachers. Included in these reform initiatives at the state level is what is probably the nation's most far-ranging system of career ladders for enhancement of the teaching profession; a new set of graduation requirements and elementary and secondary programs of studies featuring an objectives-based, K-12 core curriculum and more rigorous standards for graduation. Reform has also stressed additional focus on student educational planning, new guidelines for student activities, a new master plan for vocational education, and a statewide effort in

improving the role and performance of the school principal. The state is also implementing year-round schools where appropriate. Utah has also continued an educational productivity program which has been in place since 1981.

All of these statewide programs, as well as similar efforts at the local level, have the potential for enhancing the quality of education for Utah students. Thus, it would seem increasingly important to continue to monitor the performance of Utah students on a variety of academic and non-academic measures. Utah Educational Quality Indicators, along with Utah's Statewide Educational Assessment program, provide the state with a long-term view of the performance of students statewide. Over a period of time these programs will provide significant information concerning the impact of the many educational reform efforts.

Goals of Education in Utah

Utah's 1984 Graduation Requirements set forth the central purposes of education in the state of Utah in the following statement:

The primary goal of education is the development of individuals who possess the knowledge, skills, and human characteristics necessary to enable them to live meaningfully as individuals and as positive contributors to society. To achieve this ultimate goal, the individual must be provided experiences to develop skills in language and thinking, scientific understanding, mathematics, historical perception, esthetics appreciation, social interaction, movement, fitness and health, and career competencies. [pg. 1]

This statement of the central purpose of education expresses very accurately the focus of Utah Educational Quality Indicators as well as the Statewide Educational Assessment Program. Both of these efforts include strong emphasis on measurement of the basic skills, with highly reliable and valid measurement instruments, along with measurement of other key dimensions

of student characteristics dealing with social, emotional, esthetic, and career competencies.

The emphasis on a broad definition of the purposes of education, which is cited above from the new Utah Graduation Requirements, is a continuation of a long-term emphasis in the state on defining education to encompass not only the cognitive skills which are typically highlighted in educational goals, but also the other important aspects of human development which are often non-cognitive.

The 1984 Graduation Requirements go on to elaborate the central role of elementary and secondary education. In respect to elementary education, the Board's policy states the following:

The elementary school reaches the greatest number of students for a longer period of time during the most formative years of the school experience. This unparalleled responsibility makes it imperative that each elementary school be provided with effective leadership, meaningful standards, a balanced curriculum, sufficient means, and competent staff. [pg. 1]

In respect to secondary education, the 1984 Graduation Requirements make the following statement:

The secondary school should provide the opportunity for every student to have a challenging educational experience which will prepare him/her to pursue a fulfilling and productive role in society, which both transmits and enhances our culture. A comprehensive curriculum with enough flexibility to strengthen individual talents and interests must be available for all students. [pg. 1]

This general orientation as to the fundamental purposes of education and the role of elementary and secondary education is elaborated on in the 1984 Graduation Requirements by the inclusion of a program of studies for both elementary and secondary students which is based on the concept of a core curriculum. In essence, Utah's core curriculum is an attempt to identify the core body of common learnings, including skills, concepts and attitudes which make up the foundation needed by Utah students for progress in school as well as a basis for future choices.

The National Test Score Decline and Beyond

A major area of concern expressed in "A Nation at Risk" and similar analyses of the status of public education dealt with a decline in various kinds of test scores during the decades of the 1960's and 1970's. The most visible and highly reported decline was in the area of college entrance examination scores, including the two major programs in this area, the Scholastic Aptitude Test (SAT) and the American College Testing program (ACT). In 1975, the College Entrance Examination Board (CEEB) commissioned an intensive study of the score decline. In their report, CEEB's advisory panel, chaired by Willard Wirtz, former Secretary of Labor, concluded that the score decline was unquestionably more than a statistical artifact, and was of real educational significance. This observation was strengthened by the panel's conclusion that declines had occurred on a variety of standardized academic tests in addition to the SAT.

More recently, after a period of essentially level scores for college entrance test performance, 1982 marked the first increase in national average scores as measured by the Scholastic Aptitude Test. This was, in fact, the first time since 1963 any increase in SAT scores had been noted. This 1986 edition of Quality Indicators, in the sections to follow dealing with ACT and SAT score results, illustrates the trends of student performance over the past several years for both the nation and the state. Both the national and state results suggest an end to the two decades of score declines on college entrance measures and, indeed, substantial growth in 1984 and 1985.

National Attitudes Toward Education

Coincident with the release of "A Nation at Risk" and other similar reports in 1983, the attitudes held by the public about public education fell

to a ten-year low. Gallop's annual poll of the public's attitudes toward education for 1983 showed that less than one-third of the general public afforded the public schools either an "A" or "B" rating. Results from the 1984 Gallop Poll, however, showed a marked increase in the levels of ratings given by the Gallop national sample to public schools. The 1984 results showed 42% of Gallop's national sample giving the schools either an "A" or a "B" rating, while 1985 showed a further increase with 43% rating the schools at this level. The 1984 and 1985 Gallop Poll results represent a significant departure from the period from 1979 through 1983 in which a typical year found only about one-third of the Gallop sample awarding an "A" or "B" rating to their local public schools.

In analyzing his most recent results, Gallop (1985) has the following observation:

As has always been the case, those individuals most closely in touch with the public schools tended again in 1985 to perceive the local public schools more favorably. Among respondents with children attending public schools, 52% gave the public schools in their communities a grade of "A" or "B". Among respondents with no children in school, only 39% gave the local public schools a grade of "A" or "B". [pg. 36]

Citizen Priorities For Emphasis in Utah's Public Schools

A 1980 study, conducted jointly by the Utah State PTA and the State Office of Education, highlighted areas where nearly 1,200 Utah citizens felt additional emphasis should be placed in public education. Specifically, those participating in this study responded to the question, "In your opinion, what could the educational system do to better meet the needs of students and the public?" The following were the most frequently mentioned responses to that question and are presented in rank order.

- ° First, more emphasis on the traditional academic areas such as English, mathematics, reading, science, and history.

- ° Second, place less emphasis on extra-curricular activities and more on basic classroom study.
- ° Third, provide additional counseling opportunities for students.
- ° Fourth, provide additional student discipline.
- ° Fifth, provide opportunities for better and more frequent parent-teacher communication.
- ° Sixth, retain and keep highly qualified teachers.

Interestingly, most of the items in this list have been the focus of one or more aspects of Utah efforts at educational reform.

Sources of Information for this Report

Utah Educational Quality Indicators contains information of several basic types. The first type of information deals with student academic achievement and aptitude. Included in this category are results from the American College Testing program, the Scholastic Aptitude Test, the preliminary Scholastic Aptitude Test, the Utah Statewide Educational Assessment program, the Advanced Placement program, the National Assessment of Educational Progress, and the International Evaluation Study.

A second category of information relates to student attitudes, non-cognitive characteristics (such as academic self-concept) and evaluations of their school experiences. These results are found in the chapter reporting results from the ACT as well as the chapter on the Statewide Assessment Program.

Also included in this volume are two kinds of information on educational attainment. These are reported in the chapter dealing with the United States Census and the chapter dealing with the course-taking patterns of Utah high school seniors. Each of these sources of information will be described in detail in their respective chapters.

Limitations of the Report

The information contained in Quality Indicators is a compilation of existing test results and other findings taken from several different sources. Each of the testing or other data gathering programs which provided results for Quality Indicators had its own purposes for measuring student performance and other characteristics. With the exception of the Utah Statewide Educational Assessment program, the purposes of these other measurement efforts were not centered on assessing the quality of public education in the state of Utah. Taken in total, however, results from these various measurement programs are certainly important indicators of the overall performance of Utah's public school system.

It should be emphasized that this report, which is based on a variety of results from ongoing and special studies, cannot take the place of a scientifically-based program of student assessment. Utah has such a program in its Statewide Educational Assessment conducted every three years. Statewide Assessment provides definitive, cognitive and non-cognitive information about the functioning of Utah's school system based on large, representative samples of fifth and eleventh grade students. Summaries of Statewide Assessment Results are included in this volume and are an important portion of the Quality Indicators approach which gathers information from numerous sources to help describe the status and trends of the educational performance of Utah students.

AMERICAN COLLEGE TESTING PROGRAM (ACT)

The American College Testing Program provides a regularly scheduled program of testing and reporting to students, school systems, and colleges across the nation. Students taking the ACT Battery are generally college-bound eleventh or twelfth graders.

ACT scores have typically been required for admission by institutions of higher learning in Utah. As of 1985, over 65% of the students in a given graduating class in the state of Utah took the ACT. Among the major uses of ACT test information are status reports on student educational development, uniform information on educational attainment, information for student placement, baseline data on students for institutional research, and the prediction of student academic performance in college.

Each year almost one million students across the United States take the ACT and these results are used by over 20,000 educational institutions. The ACT is the major college admissions test used in 28 of the 50 states.

While the ACT battery has changed somewhat since its inception in 1959, the core of the testing program has remained essentially the same. At present, the battery consists of the following sub-tests or sections as described by ACT (1984):

English Usage (75 items, 40 minutes). This test measures the student's understanding of the conventions of standard, written English: punctuation, grammar, sentence structure, diction, and style, and logic and organization. The test does not measure the rote recall of grammatical rules; instead, it stresses the ability to analyze effective expository writing of the kind that will be encountered in college courses.

The Mathematics Usage Test (40 items, 50 minutes). This test measures the student's mathematical reasoning ability. It emphasizes the solution of practical, quantitative problems that are encountered in many college courses and includes mathematical techniques typically covered in high school courses. The test emphasizes quantitative reasoning, rather than memory of formulas, knowledge of techniques, or computational skill.

The Social Studies Reading Test (52 items, 35 minutes). This test measures the student's ability to read, analyze, and evaluate social studies materials. There are two types of items: the first type is based on reading passages, and the second on general background or knowledge obtained in high school social studies courses. The items based on reading passages require reading comprehension skills and the ability to draw inferences and conclusions to examine the interrelationships and import of ideas, to extend ideas to new situations, to make deductions from experimental or graphic data, and to recognize a writer's bias, style, and mode of reasoning. The background knowledge items ask the students to apply what they have learned in high school social studies courses to familiar, new, or analogous problems.

The Natural Sciences Reading Test (52 items, 35 minutes). This test measures the student's ability to read, analyze, and evaluate material from the natural sciences. There are two types of items: the first type is based on reading passages, and the second on knowledge typically gained in high school science courses. The reading passages concern a variety of scientific topics and problems, often describing scientific experiments and summarizing their procedures and outcomes. The questions based on these passages require reading comprehension skills, and the ability to understand and distinguish between the purposes of experiments, to examine the logical relationship between experimental hypotheses, and the generalizations that can be drawn from the experiments, to predict the effect of the application of ideas to new situations, to judge the practical value of elements in an experiment, and to evaluate proposed alternative ways of conducting an experiment. The knowledge items ask the students to apply what they have learned in high school science courses to familiar, new, or analogous problems.

The Student Profile Section and Interest Inventory. The student profile section requests information about each student's admissions and enrollment plans, academic and out-of-class high school achievements and aspirations, and high school course work. The ACT interest inventory is designed to measure six major interest dimensions. Results are used to compare the students' interests with those of college-bound students who later majored in each of a wide variety of areas. [pg. 1]

A Note on the Interpretation of ACT Achievement Test Scores

The publication, "Using the ACT Assessment on Campus" (1984) contains the following description of the ACT standard score scale system:

For each of the four academic tests, the raw score is the number of correct responses. These raw scores are converted to standard scores on a scale that ranges from one (low) to thirty-six (high). This conversion puts the results of the four tests on a common scale and allows the standard score on any one test to be

compared with the standard scores on other tests. The composite score is the average of the standard scores on the four tests. The mean composite score for college-bound high school students is approximately 18. [pg. 2]

Long-Range Trends in State and National ACT Performance

An examination of the sixteen year period from 1970 through 1985 documents a general down-trend in the performance of both Utah and national students on the ACT from the late 1960's and early 1970's which persisted until the end of the decade. This down-trend impacted on every score area of the ACT to some degree and is illustrated graphically in Appendix A of the present report.

The following sections will present a detailed analysis of score trends on all five ACT test areas for the most recent eight-year period beginning in 1978 and ending in 1985. It should be noted that beginning in 1985, the ACT national results are based on all of the students in a given graduating class taking the test on the five national test dates. This is a departure from ACT's previous procedure of reporting results for a 10% random sample of students taking the test.

Utah and National ACT Results for the Most Recent Eight-Year Period: 1978-1985

Exhibits 1 through 5 present the most recent ACT standard score averages (means) for Utah high school students taking the test from 1978 through 1985. Averages are also presented for the national group of ACT test-takers for the same period of time. As was noted earlier, beginning with 1985, both Utah and national results are for only the students in a specific graduating class and national results are now based on all students taking the test rather than the previous 10% random sample.

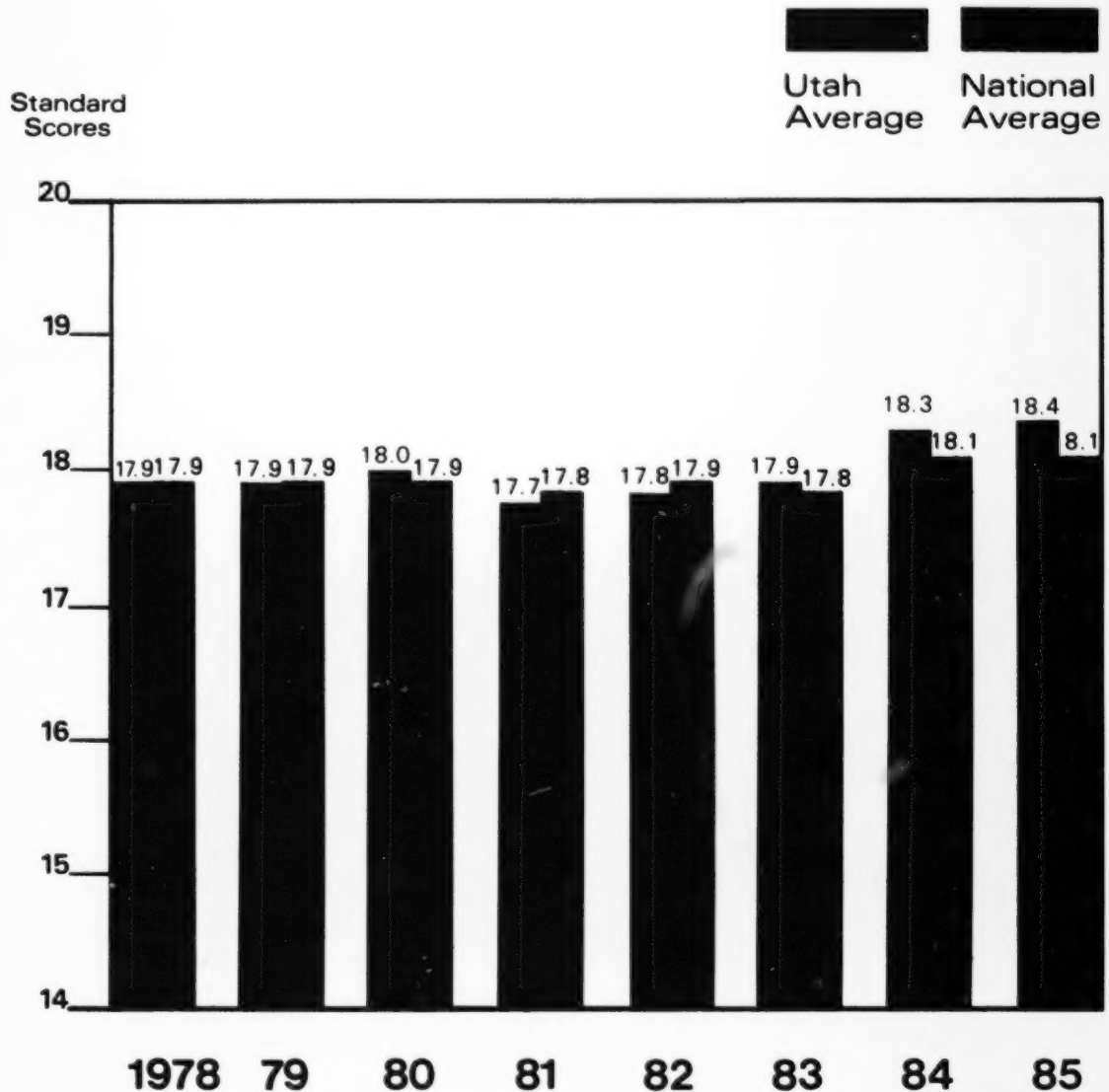
The comparison between Utah and national averages places the state at somewhat of a disadvantage since a higher percentage of Utah students takes the ACT than is true in most other states. The ACT is taken by a self-selected group of students and Utah has traditionally had a very high percentage of a given graduating class elect to take the test. In 1985 approximately 65% of students in the graduating class of 1985 elected to take the ACT in Utah. Thus, the national average on the ACT is, in a sense, a moderately difficult standard for the state of Utah on this test. A related implication here is that the Utah group of students taking the ACT likely includes many lower-scoring students who would not take this test in many other states.

In the period of time represented in Exhibits 1 through 5, the number of Utah students taking the ACT has ranged from a low of 11,418 in 1979 to a high of 14,750 in 1984. Prior to 1985 the national 10% random sample typically included about 75,000 students. Since all students in the graduating class of 1985 are included in the national group for that year, a total of 683,568 students are included in the national 1985 results.

English - Exhibit 1. Exhibit 1 presents the results for both the Utah students and the national group of students taking the ACT English test from 1978 through 1985. Utah and national scores were essentially stable from 1978 through 1983. In 1984, Utah scores showed a rather dramatic increase in the ACT English performance of students taking this test with another modest increase in 1985. The 1984 state average of 18.4 is the highest average score obtained by Utah students on this test during the sixteen-year period from 1970 through the present.

EXHIBIT 1

**Utah versus National ACT English Average Scores for
College-bound High School Students**



Source: ACT High School Profile Reports 1978-85

Mathematics - Exhibit 2. Results for Utah students and the national group taking the ACT mathematics test are depicted in Exhibit 2. Over this most recent eight-year period Utah students have consistently under-performed the national group of ACT test-takers on this test. The state's lowest average score on the mathematics test was realized in 1983 when an average score of 16.4 was attained. As with most other areas in the ACT, 1984 showed a considerable upswing in the performance of Utah students on this test. This gap between Utah and national performance also closed in both 1984 and 1985. In spite of these recent gains however, Utah scores still remained substantially lower in 1985 than the levels of performance observed during the early 1970's.

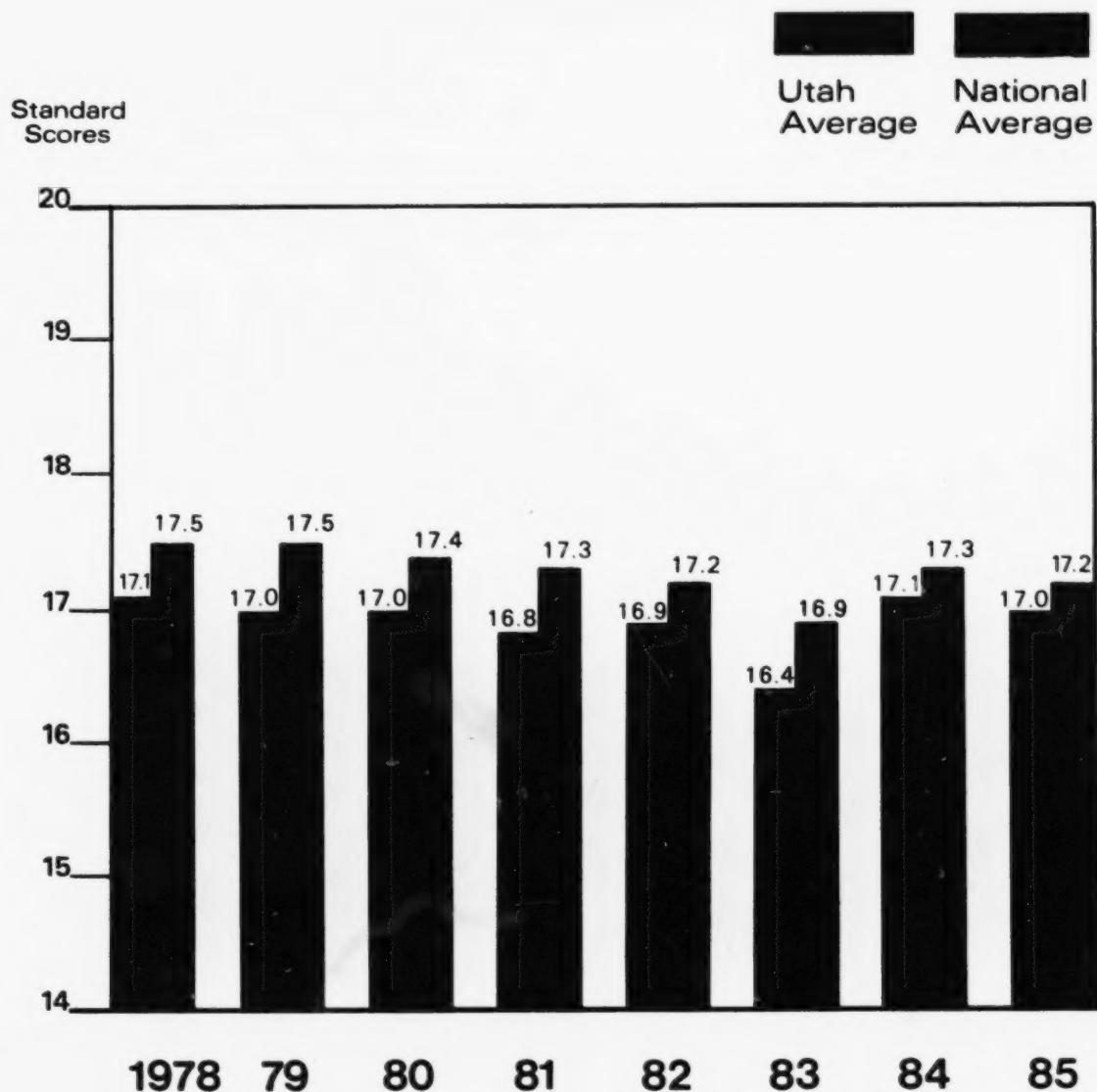
Social Studies - Exhibit 3. The pattern of performance of Utah students on the ACT social studies test is similar to that observed for several tests in the battery. During the period from 1978 through 1985 the scores of Utah students were consistently at or above the national average with a substantial increase in performance being noted in 1984 and sustained during 1985. Again, in spite of the recent positive trend, both Utah and national social studies averages remained lower than the levels of performance on this test during the early 1970's.

Natural Science - Exhibit 4. Utah students have traditionally shown performance superior to that of the national ACT group on the natural science test. The scores of Utah students exceed those of the national group in every year from 1978 through 1985 with a marked increase in performance in 1985 for Utah students. Utah ACT natural science scores are actually higher in 1985 than those observed during the early 1970's.

Composite Achievement - Exhibit 5. Exhibit 5 shows the performance of the Utah and national groups on the ACT composite score which represents an

EXHIBIT 2

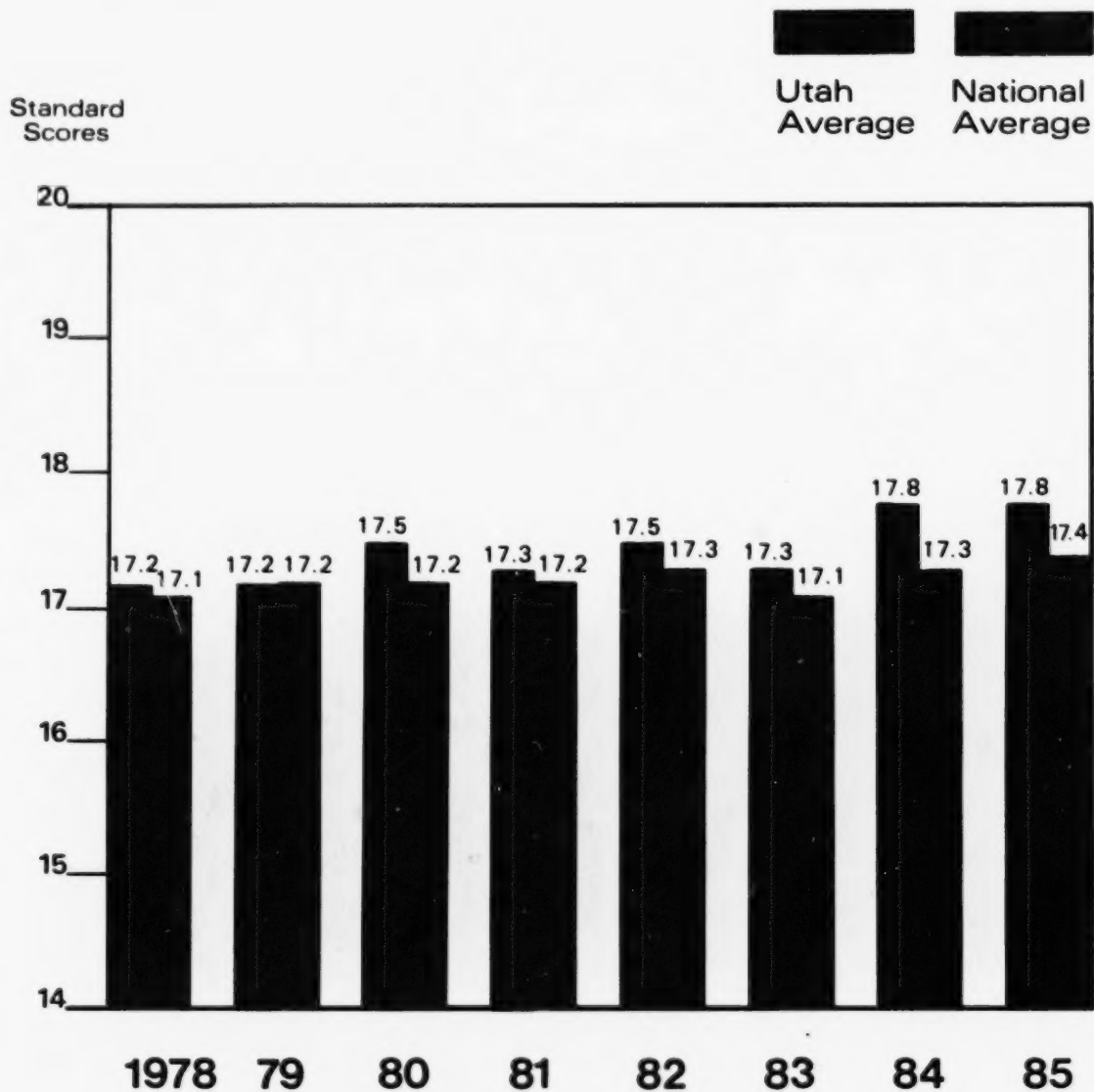
Utah versus National ACT Mathematics Average Scores for
College-bound High School Students



Source: ACT High School Profile Reports 1978-85

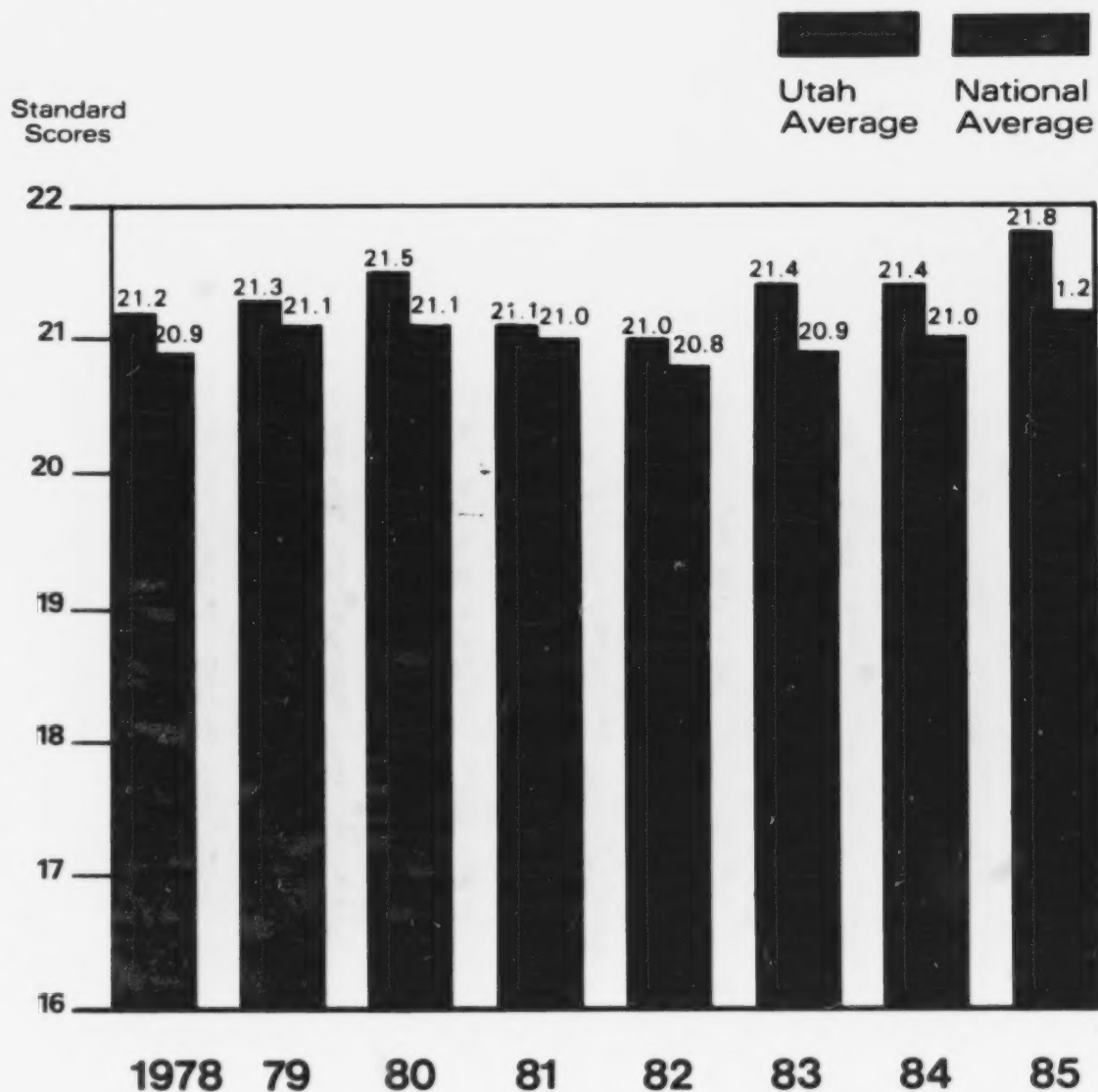
EXHIBIT 3

**Utah versus National ACT Social Studies Average Scores
for College-bound High School Students**



Source: ACT High School Profile Reports 1978-85

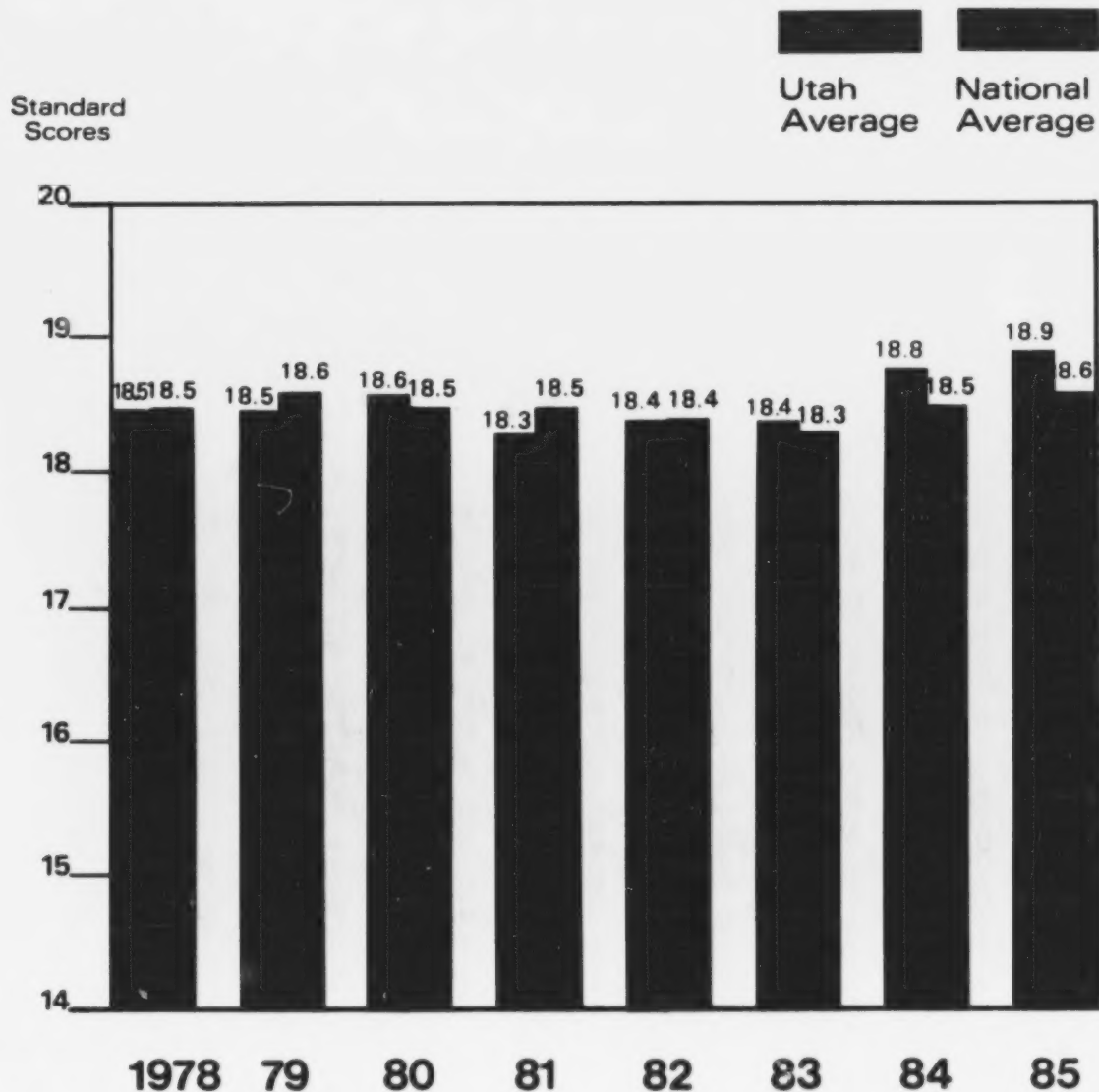
**Utah versus National ACT Natural Science Average Scores
for College-bound High School Students**



Source: ACT High School Profile Reports 1978-85

EXHIBIT 5

Utah versus National ACT Composite Average Scores for
College-bound High School Students



Source: ACT High School Profile Reports 1978-85

average of the other four ACT achievement tests. Through 1983, the performance of Utah and national students remained very similar on this composite measure. As would be expected from an analysis of the previous tests which are components of the composite, the Utah composite score showed a substantial increase in 1984 with another slight gain in 1985. The achievement of both Utah and national students on the composite measure, however, still remains about a full standard scale point lower than that observed in 1970.

Perhaps the most remarkable finding in an analysis of all of the tests comprising the ACT battery for the period from 1978 through 1985 is the substantial increase in the average performance of Utah students during the years 1984 and 1985. To some extent the Utah increases are mirrored by the national results, however, the absolute gains of Utah students during these most recent two years are substantially greater than those achieved by national test-takers. In two areas measured by the ACT, English and natural science, the average scores of Utah students are close to historical highs for the state. The two other content areas measured by the ACT, mathematics and social studies, have evidenced strong recent performance but still remain considerably lower than the scores achieved by Utah students a decade and a half earlier.

Percentage of Students Scoring in Various ACT Score Intervals - Exhibit 6. Exhibit 6 presents an analysis of the percentage of the Utah and national ACT test-takers scoring in the ACT's four major intervals in 1985. The percentage of Utah students scoring in the test's top two intervals is higher than the national percentage for every test except mathematics. As would be expected from an analysis of the Utah and national average scores, the percentage of Utah students scoring in the top two intervals in the ACT mathematics is slightly lower than the national percentages. Looking at only

**Percentages of Utah Students Scoring in Various ACT
Test Score Intervals Compared to National ACT Group, 1985**

	Average Score	Test Score 1-15			Test Score 16-20			Test Score 21-25			Test Score 26-36		
		10%	30%	50%	10%	30%	50%	10%	30%	50%	10%	30%	50%
English	18.4		29%			32%			32%		8%		
	18.1		30%			33%			30%		7%		
Mathematics	17.0		43%			19%			23%		15%		
	17.2		42%			19%			24%		16%		
Social Studies	17.8		41%			20%			23%		17%		
	17.4		43%			20%			22%		15%		
Natural Science	21.8		16%			26%			28%		30%		
	21.2		20%			25%			27%		27%		
Composite	18.9		30%			29%			27%		14%		
	18.6		32%			28%			25%		14%		

UTAH

NATIONAL

Source: ACT High School Profile Reports 1985

the highest level of performance on the test, the interval from 26 to 36, the percentage of Utah students scoring at this highest level of the test has increased in every score area except mathematics from 2% to 5% over a five-year period. Corresponding lower percentages of Utah students scoring in the lowest interval of the ACT have also been noted. Thus, the overall average increases in the ACT performance results both from increases in the scores of the lowest and highest scoring groups of test-takers.

Differences Between Selected Groups of Students on the ACT Achievement Test

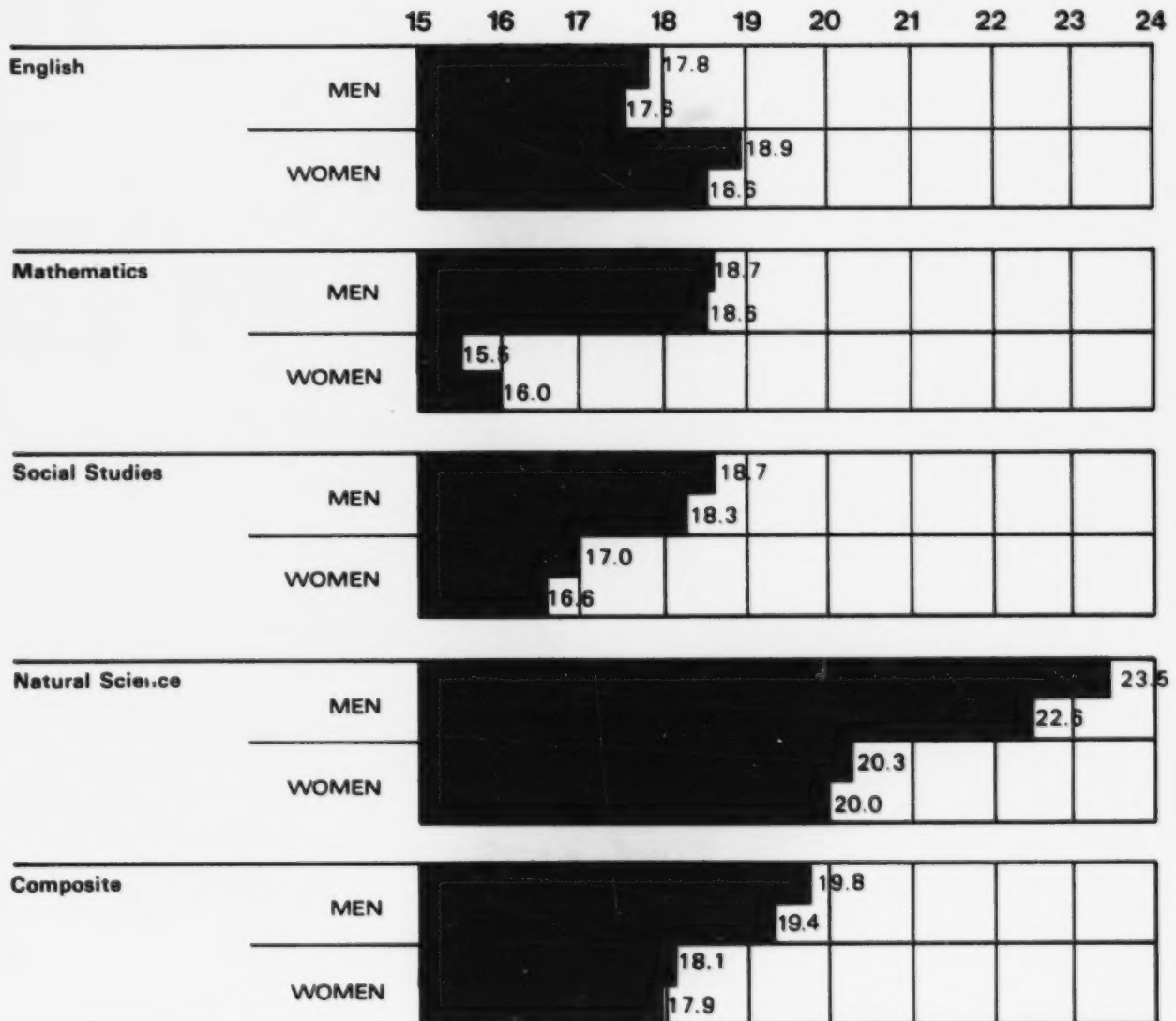
Important differences between the average scores of various groups of students taking the ACT are observable in both the Utah and national results. Some of the score differences with the most important implications are highlighted in the following sections.

Sex Differences in the ACT Achievement Scores - Exhibit 7. Exhibit 7 contrasts the scores of male and female students taking the ACT in both Utah and the nation for 1985. Findings illustrated here are indicative of a consistent pattern of differences between the scores of males and females taking the test which has been present for more than fifteen years in national and state results. This pattern of differences finds female students scoring at higher average levels on the English test, while males demonstrate superior performance in mathematics, social studies, natural science, as well as the composite score. Score differences between males and females are most pronounced in the mathematics and natural science areas for both Utah and national results. In 1985 Utah males scored higher than the national male group in every area of the ACT. Utah females scored higher than their counterparts across the nation on every area of the test except mathematics. When contrasted with results five years earlier, scores of Utah females have

EXHIBIT 7

**Average ACT Score of Utah Male and
Female Students Compared to the
National ACT Group, 1985**

UTAH 
NATIONAL 



Source: ACT High School Profile Reports 1985

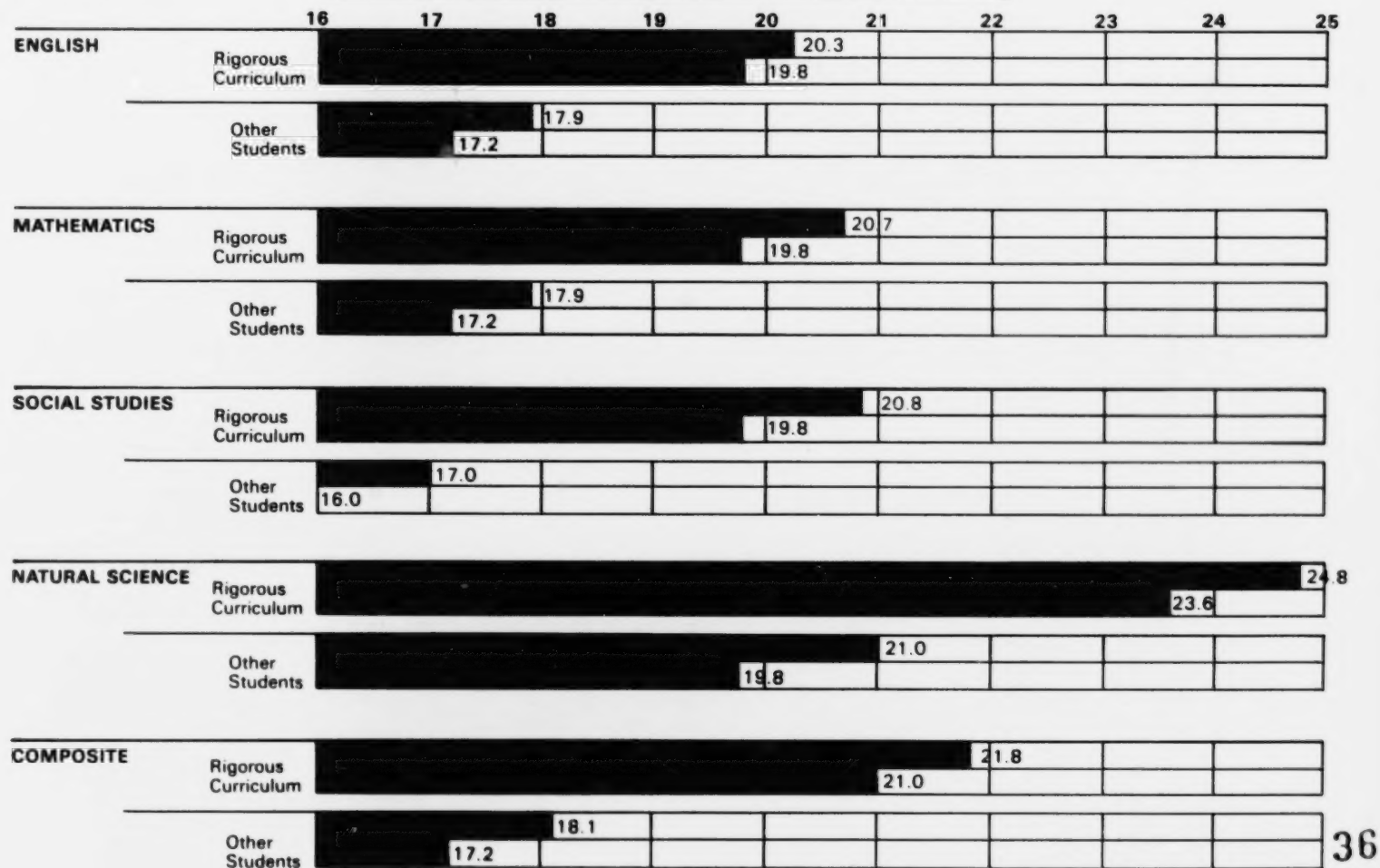
actually increased at a rate greater than those of males. Still, the magnitude of the differences in the performance of Utah males and females on the mathematics and natural science scores, in particular, remains a clear area of concern.

Differences in ACT Achievement Scores Related to Course Selection - Exhibit 8. Exhibit 8 contrasts the ACT scores of Utah and national students who took a rigorous college preparatory curriculum versus the average scores of other graduates. For the purposes of this analysis, a rigorous college preparatory curriculum included at least four years of English, three years of math, three years of social studies, and three years of Science during grades nine through twelve. The Utah students taking a rigorous curriculum included a total of 2,695 students or about 21% of the total number of test-takers in the state for 1985. The national group taking this same curriculum was about 33% of the total national group.

The impact of a strong high school program on ACT scores is apparent in an inspection of Exhibit 8. Substantial differences favor those students taking the stronger college preparatory curriculum in every area of the ACT. The magnitude of these differences ranged from 2.5 to nearly 4 full standard scale points with the largest difference noted in the natural science area. Utah students taking the more rigorous preparation outscored their national colleagues by rather substantial margins on every area of the ACT. Interestingly, an appraisal of those students taking less than a rigorous curriculum also showed Utah students scoring at a higher level on the average than their national peers on all areas of the test.

UTAH 
NATIONAL 

**Average ACT Scores for High School Graduates
Who Took A Rigorous College Preparatory Curriculum*
Versus Other Graduates**



*A rigorous college preparatory curriculum included at least the following in grades 9-12:

English: 4 years Math: 3 years Social Studies: 3 years Science: 3 years

Results From the ACT Student Profile Section

In addition to the results from the ACT achievement tests which have been presented above, the American College Testing program furnishes a variety of other information about the high school students who are tested each year. This information, contained in the ACT student profile section, provides a variety of biographical data, information about educational and vocational plans, out-of-class achievements, and student evaluations of their high school educational experiences.

Out-Of-Class Accomplishments - Exhibit 9. Exhibit 9 presents the average number of high school out-of-class accomplishments reported by Utah students taking the ACT as compared to the national ACT group for 1985. The specific items which comprise these questions represent rather high levels of accomplishment in the nine areas measured which include art, athletics, community service, leadership, music, science, speech, work experience, and writing. These activities are not only important out-of-class pursuits, but also should be viewed as having significant educational relevance as well. Each unit (1.0 in Exhibit 9), is equal to one major accomplishment in a particular area.

Analysis of this exhibit shows that the total group of Utah students tested reported larger numbers of out-of-class accomplishments than the national comparison group in eight of the nine areas measured. Work experience continued to be a strong area of emphasis for Utah students, as did community service.

Research conducted by ACT and others has demonstrated that while there is no appreciable relationship between out-of-class accomplishments and high school academic performance, such relationships do appear to exist between participation in such activities in high school and success in the "real

EXHIBIT 9

Average Number of High School Out-of-Class Accomplishments of Utah Students Compared to the National ACT Group, 1985

UTAH

NATIONAL

AREA OF ACCOMPLISHMENT		0	1	2	3	4
Art	MEN		1.12			
			1.97			
	WOMEN		1.98			
			1.94			
	TOTAL		1.04			
			1.95			
Athletics	MEN					3.58
						3.59
	WOMEN			2.45		
				2.64		
	TOTAL				2.99	
					3.07	
Community Service	MEN		1.67			
			1.04			
	WOMEN		1.60			
			1.36			
	TOTAL		1.63			
			1.22			
Leadership	MEN		1.57			
			1.51			
	WOMEN			1.87		
				1.82		
	TOTAL			1.73		
				1.68		
Music	MEN		1.60			
			1.37			
	WOMEN			2.11		
				1.91		
	TOTAL			1.87		
				1.67		

EXHIBIT 9
CONTINUED

UTAH

NATIONAL

		0	1	2	3	4
Science	MEN		.74			
			.70			
	WOMEN		.47			
			.47			
	TOTAL		.60			
			.58			
Speech	MEN		.98			
			.81			
	WOMEN		1.09			
			.93			
	TOTAL		1.04			
			.87			
Work Experience	MEN			2.28	2.73	
				2.24		
	WOMEN			1.88		
	TOTAL			2.07	2.47	
Writing	MEN		.94			
			.88			
	WOMEN		1.33			
			1.21			
	TOTAL		1.14			
			1.05			

Source: ACT High School Profile Reports 1985

world" after a student's education is completed. Thus, the significance of these activities lies in their predictive implications for adult career success and adjustment rather than any immediate forecasting power they might have in relationship to academic success in college.

Student Ratings of the Adequacy of Their Total High School Education - Exhibit 10. In another portion of the ACT student profile section, students were given the opportunity to rate the overall adequacy of their high school experience. Initially, students classified their personal high school program as emphasizing one of four major areas. These included business-communication, vocational-occupational, college preparation, or general. The results shown in Exhibit 10 find Utah students rating their high school programs considerably higher than did their national colleagues. For example, 58% of the Utah vocational-occupational students rated their program as either "good" or "excellent" compared to 52% of the national comparison group. For those students classifying themselves as taking a college preparatory curriculum, 72% of the Utah group characterized their high school program as "good" or "excellent" while 69% of the national group of students held the same opinion. Much the same trend of results was true of students classifying themselves as taking a business-communication course of study and students who characterized their high school program as "general."

Students Satisfaction With Specific Aspects of The Local High School - Exhibit 11. Exhibit 11 presents an analysis of the satisfaction of Utah and national students with specific aspects of their local high school programs. Areas receiving the highest marks from Utah students were provisions for academically outstanding students, the number and variety of course offerings, and the quality of classroom instruction. Rated at lower levels by Utah students were areas such as provisions for special help in subjects such

EXHIBIT 10

**Expressed Adequacy of Utah High School Education Compared to
National Results According to Curriculum or Program, 1985**

Expressed Adequacy	Business Communication		Vocational Occupation		College Preparation		General and Other	
	UTAH	NATIONAL	UTAH	NATIONAL	UTAH	NATIONAL	UTAH	NATIONAL
Excellent	14%	10%	11%	9%	24%	21%	10%	8%
Good	48%	45%	47%	43%	48%	48%	46%	41%
Average	26%	33%	29%	35%	16%	20%	31%	38%
Below Average	4%	5%	6%	6%	3%	3%	6%	7%
Very Inadequate	8%	7%	7%	7%	9%	8%	6%	6%
Number of Utah Students	1,522		1,506		6,226		3,071	
Number of National Students	75,160		57,447		455,847		116,313	

Source: ACT High School Profile Reports 1985

Utah versus National Student Satisfaction with Various Aspects of Local High Schools, 1985

AREA	Satisfied No Change Necessary		Pretty Much Neutral		Dissatisfied, Improvement Needed		No Experience	
	UTAH	NATIONAL	UTAH	NATIONAL	UTAH	NATIONAL	UTAH	NATIONAL
Classroom Instruction	56%	62%	28%	24%	15%	13%	0%	0%
No. and Variety of Course Offerings	59%	56%	20%	16%	21%	27%	1%	1%
Grading Practices and Policies	44%	55%	32%	26%	23%	18%	1%	1%
No. and Kinds of Tests Given	51%	56%	39%	33%	10%	11%	1%	1%
Guidance Services	50%	59%	27%	20%	20%	20%	2%	2%
School Rules, Regulations, & Policies	42%	41%	29%	25%	28%	34%	1%	1%
Library or Learning Center	51%	58%	26%	24%	21%	17%	2%	2%
Laboratory Facilities	40%	46%	30%	26%	21%	21%	9%	7%
Provisions for Special Help in Reading, Math, etc.	32%	36%	25%	21%	12%	15%	31%	28%
Provisions for Academically Out- standing Students	62%	53%	20%	20%	9%	15%	8%	11%
Emphasis on Career Education & Planning	45%	43%	30%	26%	21%	24%	4%	7%

Source: ACT High School Profile Reports 1985

as reading and math, quality of laboratory facilities, and school rules, regulations, and policies. Utah students were more satisfied than the national group on four of the eleven items rated, while reporting lower levels of satisfaction on seven areas. Items where the ratings of the national group were markedly more positive than those of the Utah students were grading practices and policies, guidance services, and the library or learning center.

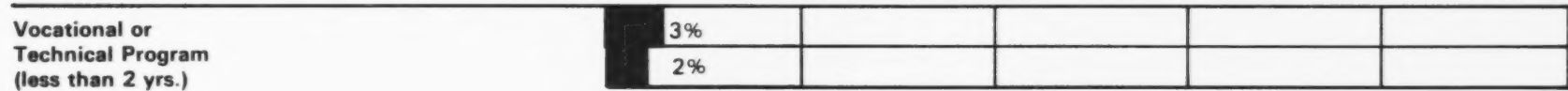
Educational Degree Aspirations - Exhibit 12. Exhibit 12 shows the degree aspirations of Utah high school students as they compare to the national ACT group for 1985. The pattern of results depicted in this exhibit is characteristic of a long-term trend in the aspirations of Utah students. Specifically, more Utah students than national students are interested in pursuing a vocational/technical program or a two-year college degree. A substantially higher percentage of Utah students seek a professional level degree such as a Ph.D. or M.D. than is true nationally. This latter finding is reflected in the smaller percentage of Utah students who wish to complete their education at the Bachelor's level.

Proposed Educational Major - Exhibit 13. Students completing the ACT high school profile section also had an opportunity to indicate their preference for a college major. Exhibit 13 presents those proposed educational majors for both Utah students and the national ACT group. By far the most popular proposed majors shown in Exhibit 13 are business and commerce (selected by 18% of the Utah students), and health professions (chosen by 14% of the Utah group). Other majors endorsed by relatively high percentages of Utah students were education (8%), engineering (9%), and the social sciences (7%). In virtually every case, the preferences expressed by Utah students are very similar to those indicated by the national ACT group.

Educational Degree Aspirations of Utah High School Students Compared to National ACT Group for 1985

UTAH 
NATIONAL 

0 10% 20% 30% 40% 50%



Source: ACT High School Profile Reports 1985

Students Requesting Educational Assistance - Exhibit 14. Exhibit 14 shows a comparison of Utah students to the national ACT group in respect to the percentages of students requesting educational assistance in several areas. As has been true previously, higher percentages of Utah students request assistance in every area listed with the exception of educational/vocational plans. Areas where substantially higher percentages of Utah students requested help are study skills and math skills. It would seem significant that these high percentages of Utah students who feel they will need help at the college level in such areas as study skills and math skills have not changed substantially over several years. Certainly the broad picture which emerges here is that very high percentages of college-bound Utah students could benefit from increased emphasis in the high schools in most of the areas depicted in Exhibit 14.

EXHIBIT 13

Proposed Educational Major of Utah High School
Students Compared to National Group, 1985

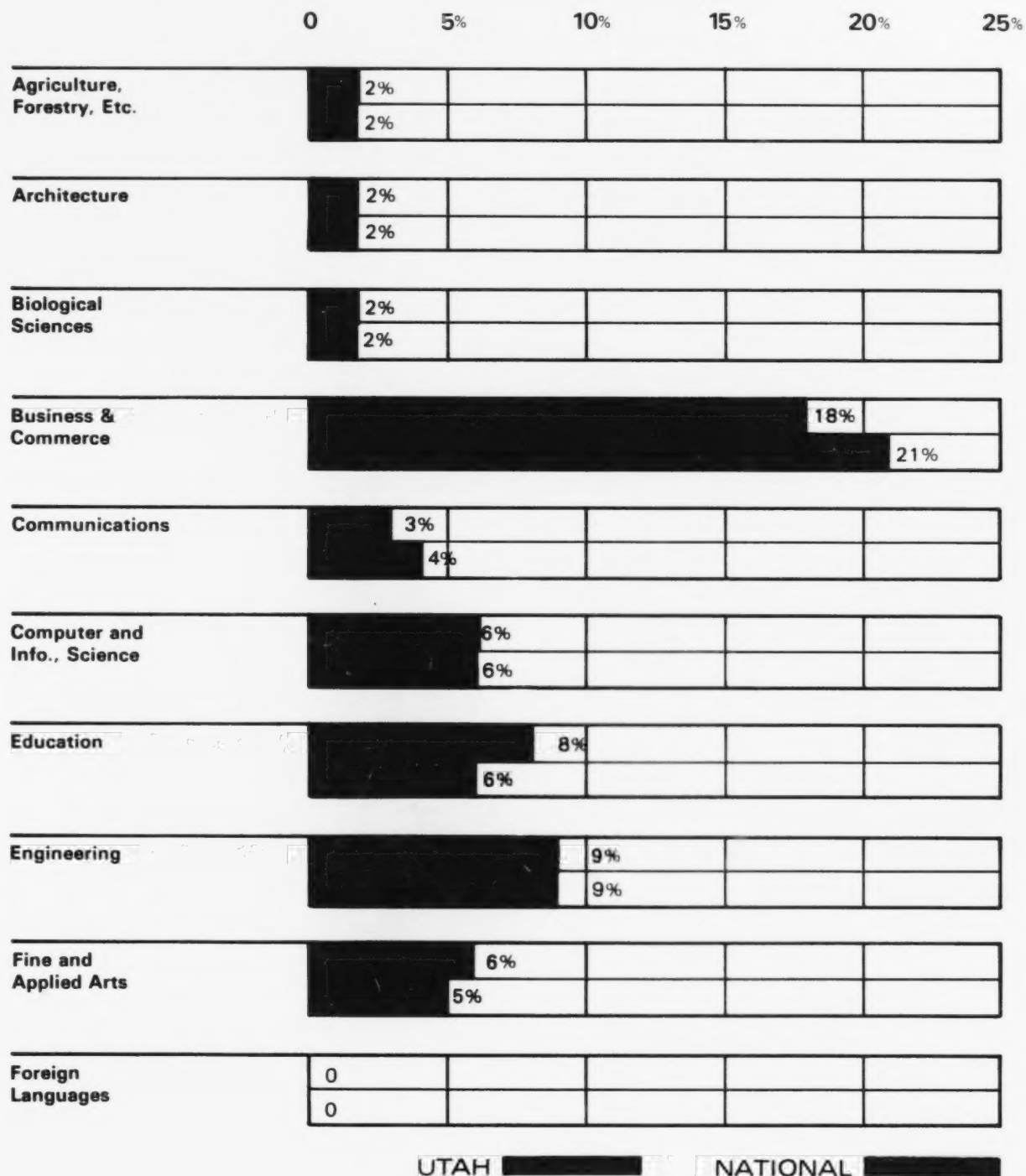
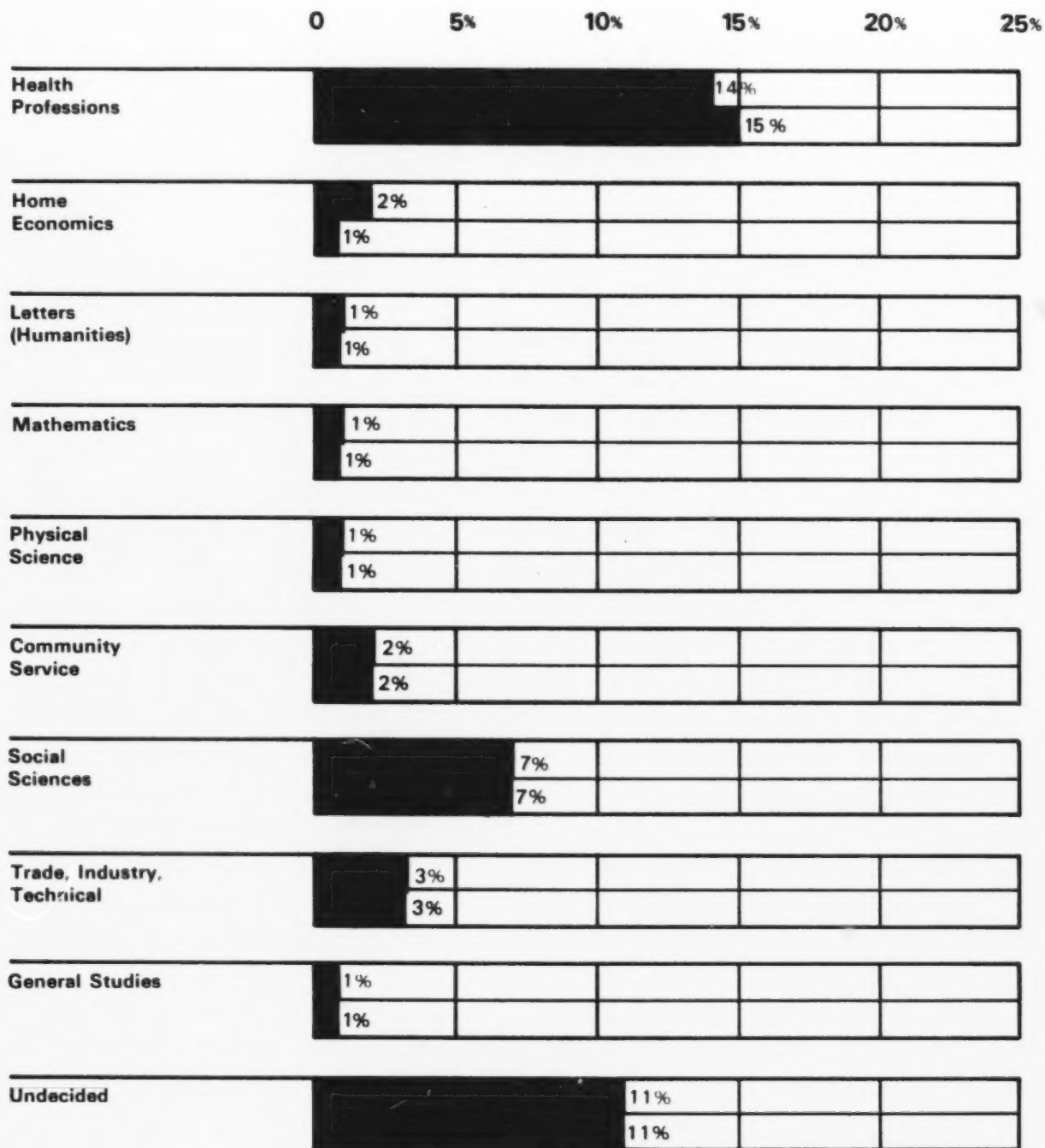


EXHIBIT 13
CONTINUED



UTAH

NATIONAL

Source: ACT High School Profile Reports 1985

Percentage of Utah Students Who Requested Educational Assistance Compared to the National ACT Group, 1985

UTAH

NATIONAL

0 10% 20% 30% 40% 50%

with

Educational/Vocational
Plans

48%

50%

Expressing Ideas
in Writing

32%

29%

Reading Speed/
Comprehension

33%

31%

Study Skills

45%

50%

Math Skills

43%

49%

Personal
Counseling

15%

13%

51%

Source: ACT High School Profile Reports 1985

SCHOLASTIC APTITUDE TEST (SAT) RESULTS

The Scholastic Aptitude Test (SAT), administered by the College Entrance Examination Board, is a second major college entrance examination taken by students seeking to enter college in this country. Nationally, nearly one million students take the SAT annually. In the state of Utah, however, where no institution of higher education requires the SAT exclusively, only 980 students took the SAT in 1985. This number is somewhat greater than the number of students taking the test in previous years, but as a percentage of the total number of students in the graduating class of 1985, the number is very small (4% compared to the 65% who take the ACT). Utah students who do take the SAT often aspire to attend colleges or universities in the eastern United States. Thus, this group of test-takers is far more select than is the group taking the ACT in Utah.

The College Board publication, Taking the SAT, describes the test as follows:

The SAT is a multiple choice test made up of separately timed verbal and mathematical sections. Verbal questions measure your ability to understand what you read, and the extent of your vocabulary. Mathematical questions measure your ability to solve problems involving arithmetic reasoning, algebra, and geometry.

SAT-Verbal Sections. There are four types of questions in the verbal sections of the SAT: twenty-five antonyms, fifteen analogies, twenty sentence completions, and twenty-five questions based on reading passages.

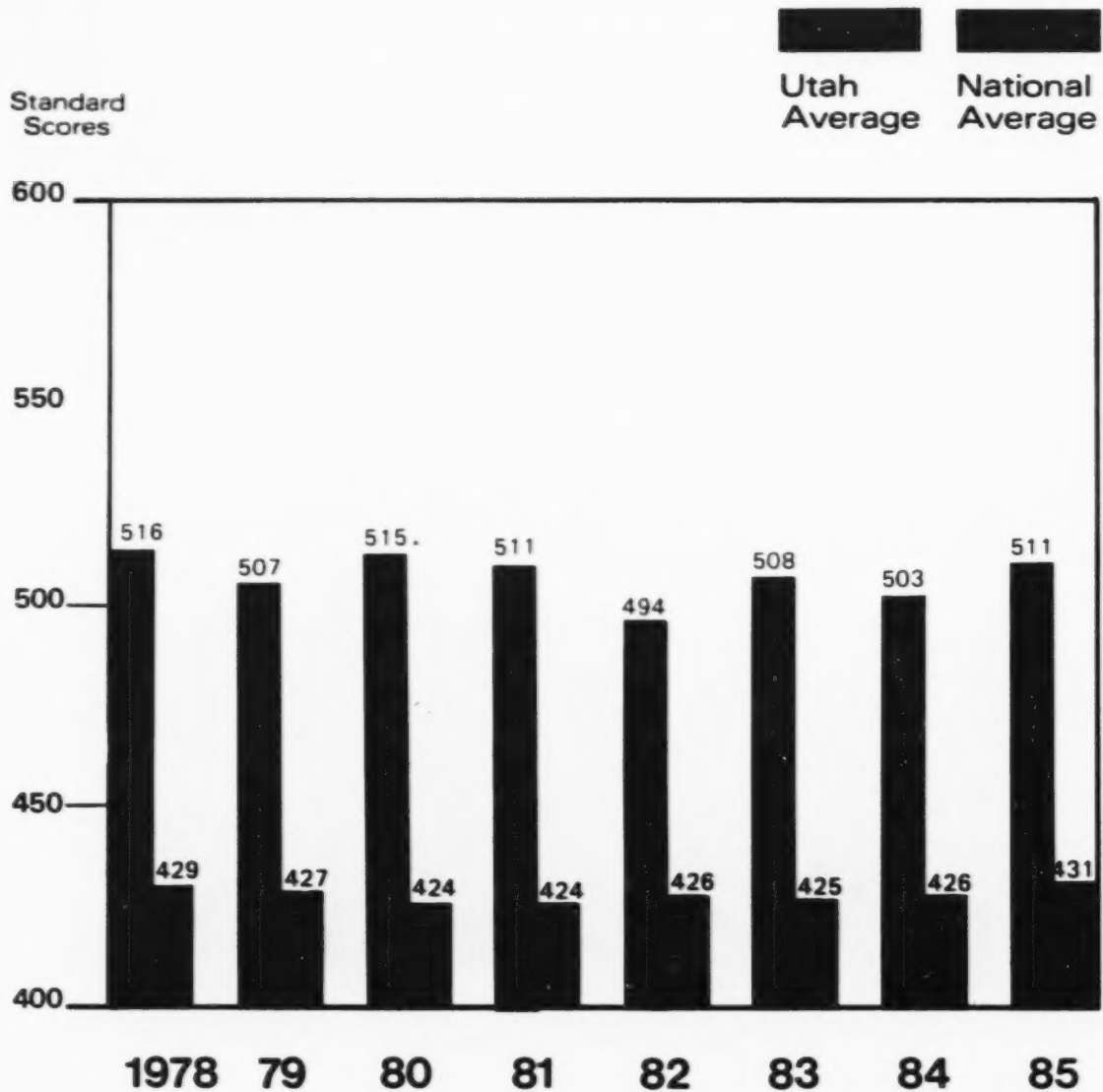
SAT - Mathematical Sections. Some questions in the mathematical sections of the SAT require you to apply numerical, graphic, spacial, symbolic and logical techniques to situations familiar to you; these may be similar to exercises in your textbooks. Other questions may require you to do some original thinking. The mathematical preparation expected is a year of algebra and some geometry.

Utah and National SAT Average Scores - Exhibits 15 and 16. As was indicated above, any comparison of Utah and national SAT average scores must be made with full knowledge that the Utah students taking the test are a much more select group than the national group of seniors who take the test. For the period of time between 1978 and 1985, which is depicted in Exhibits 15 and 16, the highest number of Utah students to take the SAT was 980 in 1985. During the same year, nearly one million high school seniors took the SAT nationally.

Exhibits 15 and 16 document the general decline in national SAT verbal and mathematic scores which began over ten years earlier and continued into the late 1970's. Also illustrated is the gradual uptrend in national SAT scores which began in 1983. Due to the small numbers of Utah students taking the SAT, the averages for the Utah group fluctuate much more than the national figures. As would be expected from knowledge of the composition of the Utah and national groups, the Utah scores are substantially higher on both the verbal and mathematics test than are those for the national group of test-takers. This is largely attributable to the much smaller percentage of Utah seniors taking the test.

EXHIBIT 15

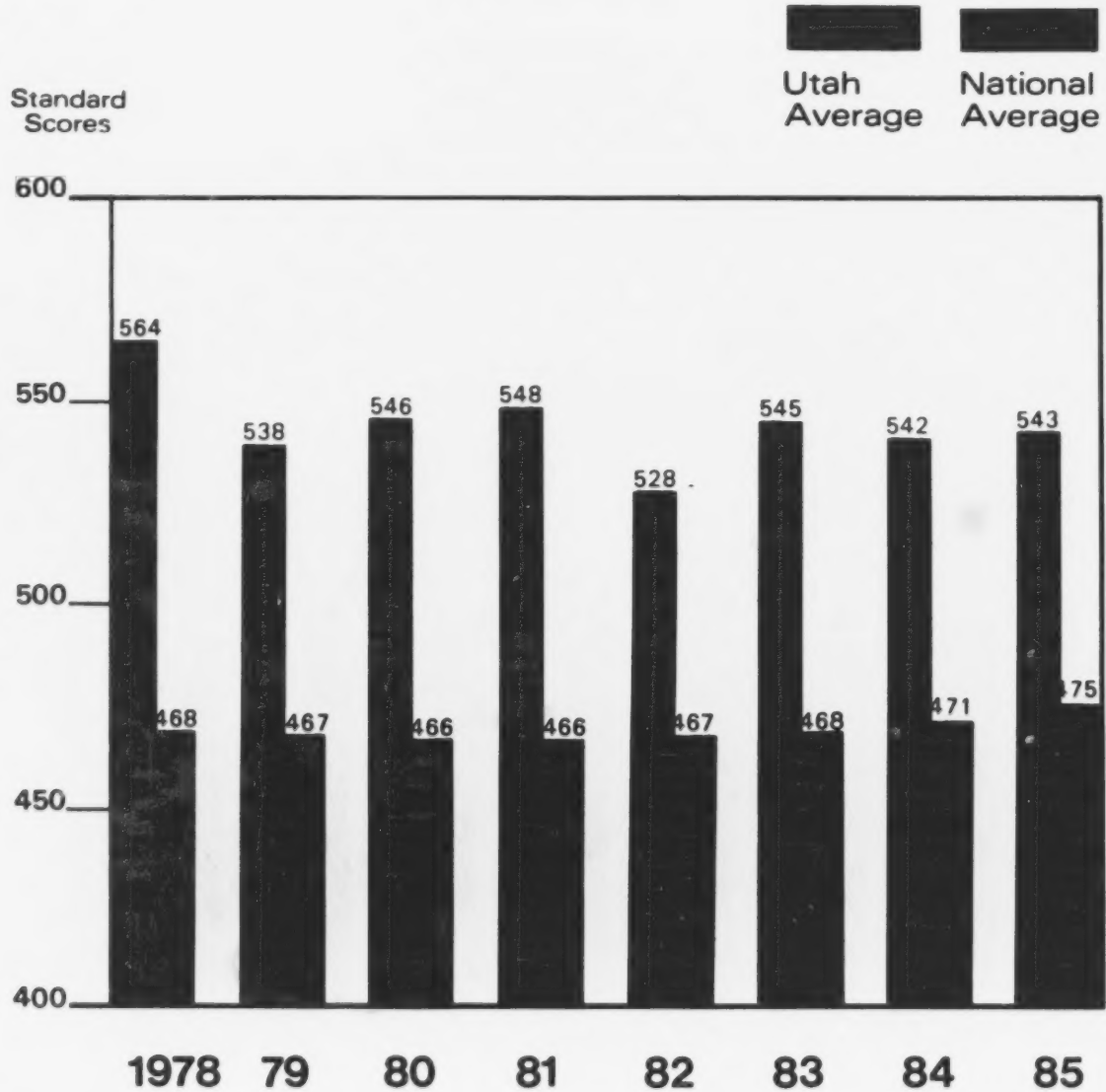
Utah vs. National SAT Average Verbal Scores



Source: College Board ATP Summary Reports 1978-1985

EXHIBIT 16

**Utah vs. National SAT Average
Mathematics Scores**



Source: College Board ATP Summary Reports 1978-1985

PRELIMINARY SCHOLASTIC APTITUDE TEST (PSAT) RESULTS

The Preliminary Scholastic Aptitude Test is taken in October by over one million college-bound high school juniors across the United States. The PSAT (also known as the National Merit Scholarship Qualifying Test - NMSQT), is taken by students who hope to compete successfully for scholarships sponsored by the College Board. In structure, the PSAT is similar to the Scholastic Aptitude Test, with a verbal section measuring antonyms, sentences, analogies, and reading comprehension and a mathematics section measuring "regular" math, and quantitative comparison.

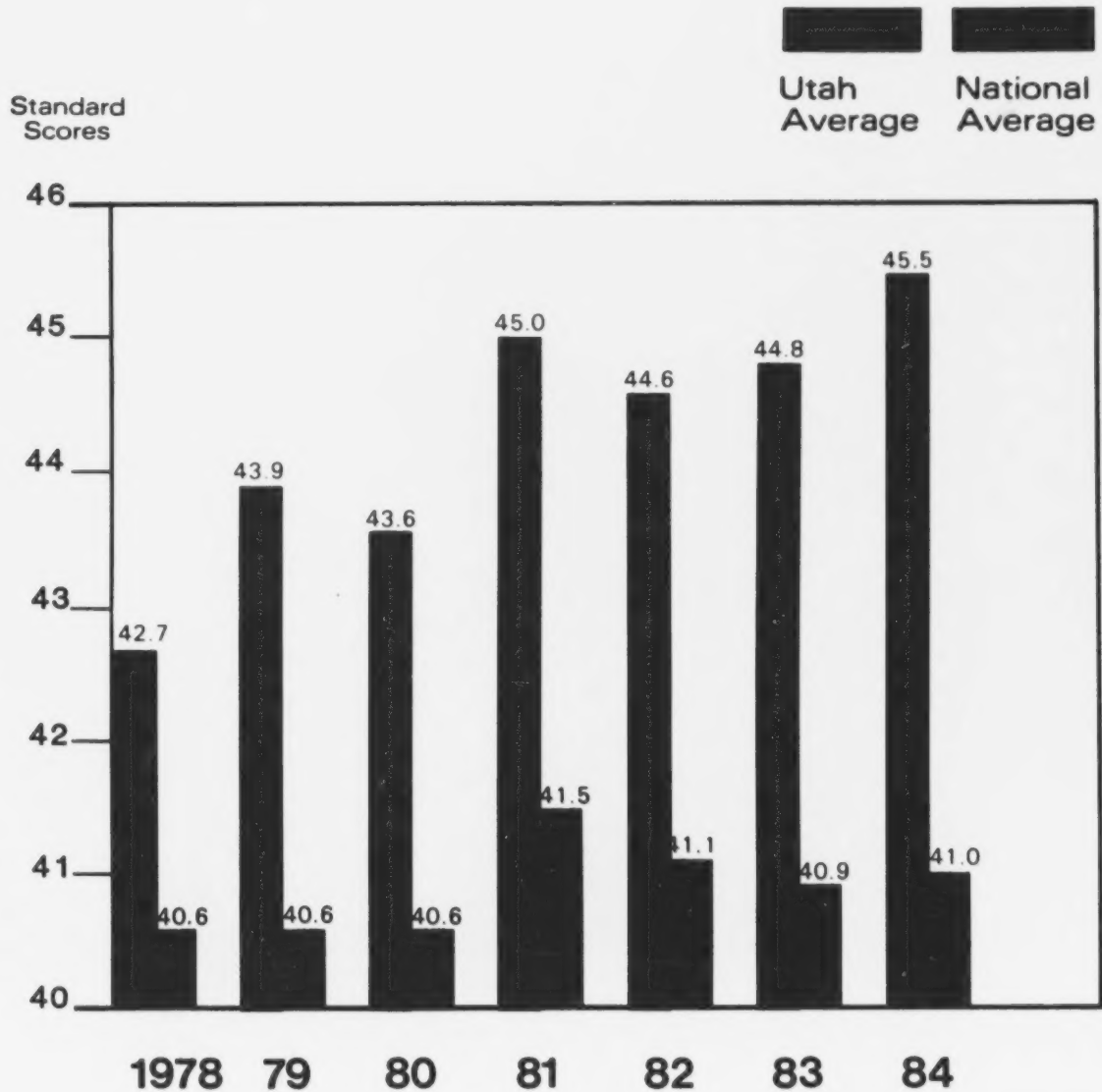
The number of Utah students taking the PSAT has risen substantially over the last several years. The 1984 group of PSAT test-takers in Utah consisted of 4,213 students. Thus, while the group of students taking the PSAT in Utah is not as select as the group taking the SAT, the Utah students still likely comprise a more select group than would be characteristic of many other states.

PSAT standard scores range between 20 and 80 for a particular student with state or national averages most often fluctuating in the range between 40 and 50.

PSAT Verbal and Mathematics Results - Exhibits 17 and 18. Exhibit 17 presents the profile of PSAT average verbal scores for Utah and the nation between 1978 and 1984. While national scores have remained relatively stable for this period of time, Utah scores have risen rather substantially between 1978 and the present. This is particularly interesting in view of the fact that the number of Utah students taking the PSAT has actually increased substantially during this same period of time.

EXHIBIT 17

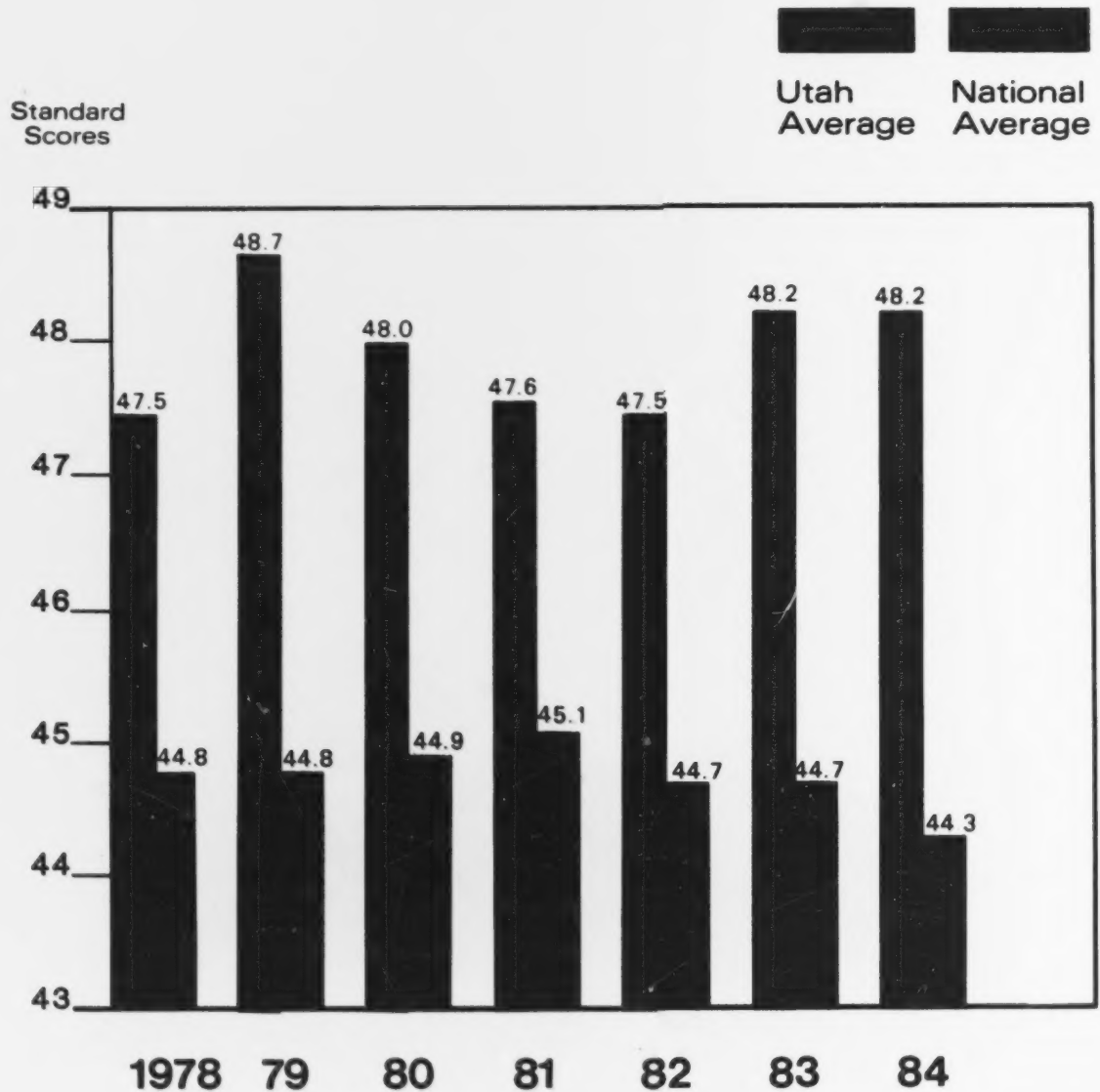
Utah vs. National PSAT Average
Verbal Scores



Source: College Board PSAT Summary Reports 1978-1984

EXHIBIT 18

**Utah vs. National PSAT Average
Math Scores**



Source: College Board PSAT Summary Reports 1978-1984

Exhibit 18 presents PSAT average mathematics scores for Utah and the nation. Here the national averages are again rather stable from 1978 through 1984, but the Utah averages show a great deal more variability. As was noted in the examination of PSAT verbal scores, the Utah mathematics scores show profound differences in favor of the Utah group. Again, it must be stressed that the PSAT as well as the SAT and ACT are tests taken by a self-selected group of students. The interpretation of trends in PSAT scores at the state level is made difficult by this factor in conjunction with the rather small number of Utah students who take the test.

UTAH STATEWIDE EDUCATIONAL ASSESSMENT PROGRAM RESULTS

Utah educators, citizens, and legislators have traditionally been concerned with improving educational practice. The Utah State Legislature has charged the State Board of Education and its staff with accomplishing various evaluation activities including a program of statewide educational assessment. In the appropriations act of 1977, the legislature expressed its intent that the State Board of Education mount a continuing assessment program built on the model first implemented by State Office of Education in 1975. Since that time, major assessments have been conducted every three years with appropriate instrument development, refinement, and reporting activities taking place between the major assessment dates. The Utah State-wide Educational Assessment program measures the basic skills achievement of Utah students as well as other important areas of educational focus such as student academic self-concept, attitude toward school, and peer relations skills.

Several different types of information have been collected in the four statewide assessment studies accomplished to date. The first type, student academic achievement, was measured using the Comprehensive Tests of Basic Skills (CTBS). Form S of the CTBS was used in the 1975, 1978, and 1981 studies, while Form U was implemented for the 1984 study. The measurement of the status of Utah students in respect to important non-cognitive educational goals, including such areas as academic self-concept and peer relations, was accomplished with carefully developed instrumentation built specifically for the Utah assessment program. All four Utah assessment efforts have also included measures of a variety of demographic characteristics which may influence student achievement. Measurement devices have also been included

which collected information on instructional strategies used by teachers to help students learn. The purposes behind this wide spectrum of measures were: (1) to provide an accurate picture of the achievement of students in Utah's public schools; (2) to provide an indication of how certain critical demographic factors are related to the way students achieve; and (3) to provide some insight into instructional approaches and techniques which influence student achievement and attitudes. All four Utah Statewide Assessment studies have examined the academic performance and other characteristics of Utah students at grades 5 and 11. Nearly 100 elementary and secondary schools have been included in each of the four assessments. In the 1984 study, nearly 8,000 Utah fifth and eleventh grade students were tested.

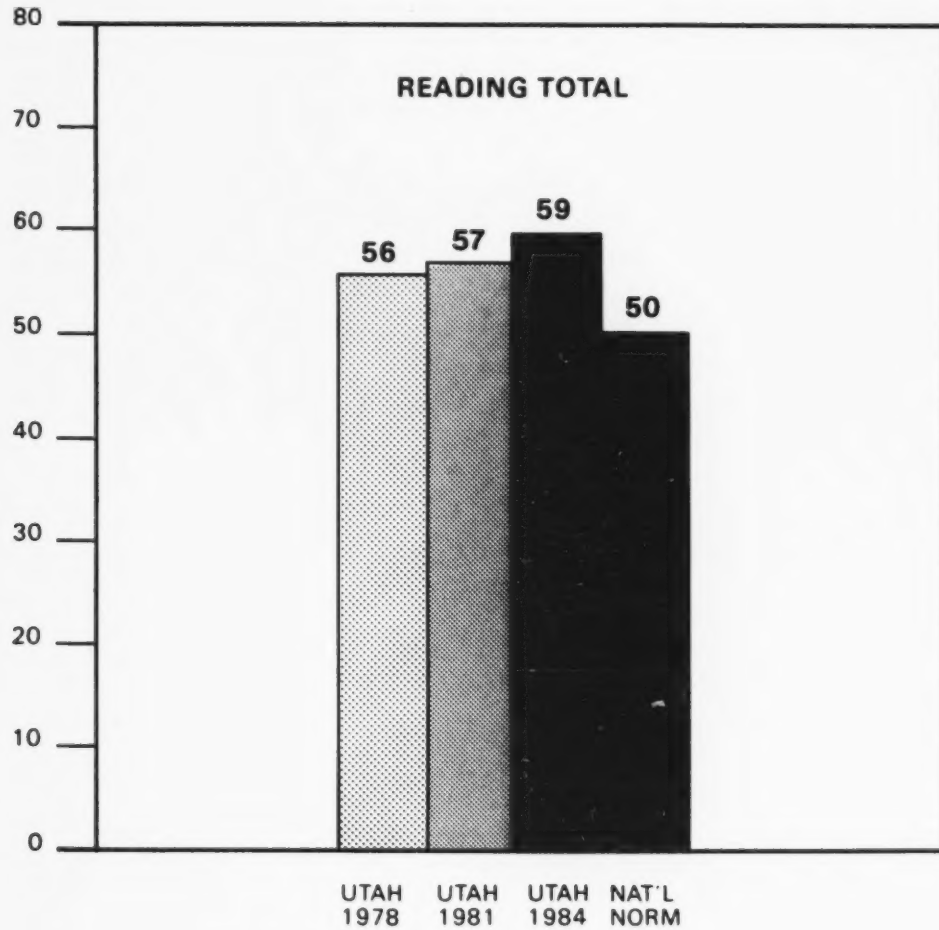
Basic Skills Achievement of Utah Students

The results from all four of the statewide assessment studies have been made available previously in a variety of reports and presentations. This report will highlight key findings from these studies.

Reading Achievement of Utah Fifth and Eleventh Grade Students - Exhibits 19 and 20. Exhibits 19 and 20 present the reading achievement results for Utah fifth and eleventh graders respectively. Exhibit 19 documents a steady, upward trend in the reading performance of Utah fifth graders from the initial assessment of reading in 1978 through 1984. In the most recent assessment, Utah fifth graders had a median national percentile rank of 59 compared to the national norm of the 50th percentile. This means that the typical fifth grade student in Utah obtained a higher score than 59% of the national norm group. When expressed as a grade equivalent, Utah fifth graders scored slightly less than one full grade equivalent higher than the national norm group.

**Changes across Time in Utah Results on
CTBS Reading Total Score, Grade 5**

MEDIAN
NATIONAL
PERCENTILE
RANK



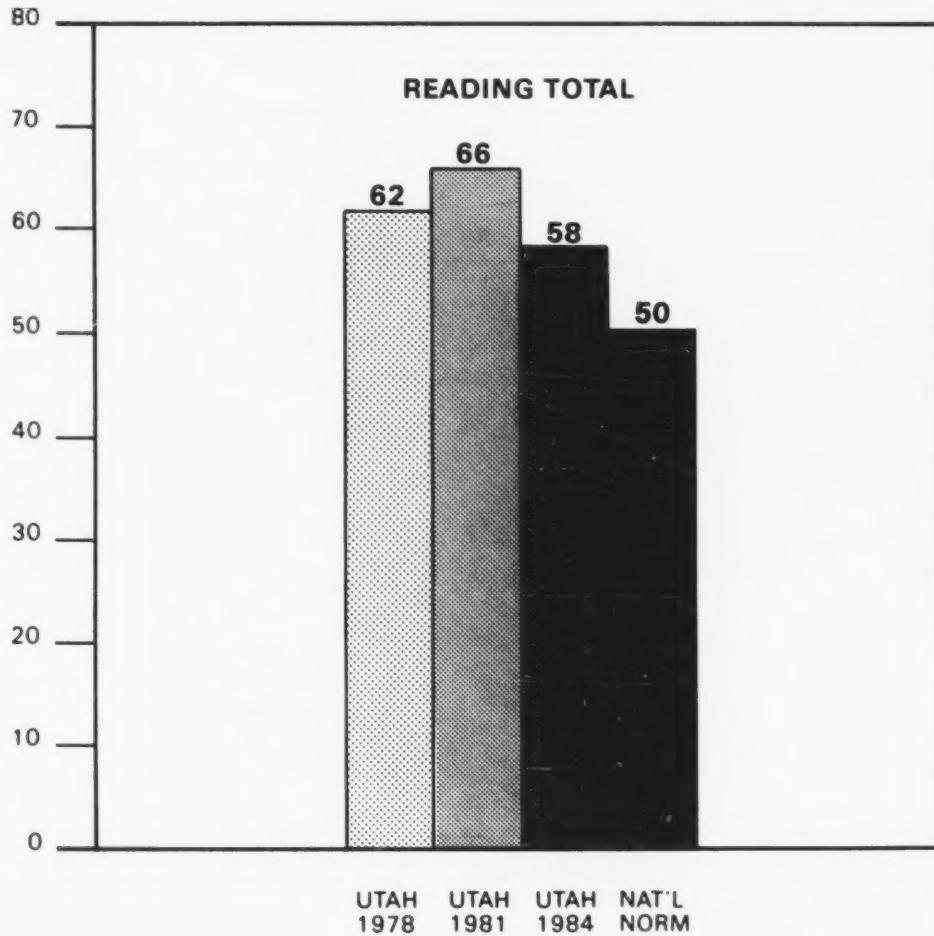
MEDIAN GRADE EQUIVALENT

6.1 6.2 6.4 5.8

EXHIBIT 20

**Changes across Time in Utah Results on
CTBS Reading Total Score, Grade 11**

MEDIAN
NATIONAL
PERCENTILE
RANK



MEDIAN GRADE EQUIVALENT	12.9+	12.9+	12.9	11.8
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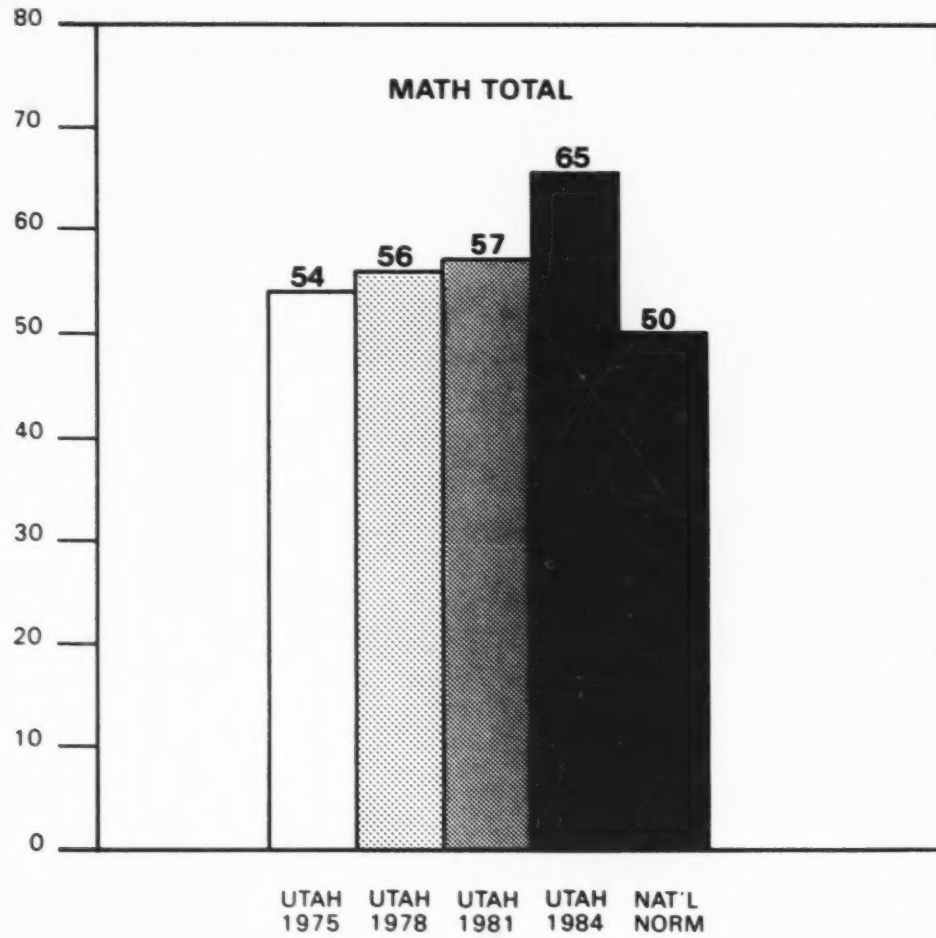
Exhibit 20 shows reading achievement scores for Utah eleventh graders. While Utah eleventh grade students continued to perform well on the CTBS total reading score, a decline was noted between the 1981 and 1984 assessments. That is, Utah's performance is still considerably above the national norm, but at a comparatively lower level than in previous years. This trend certainly is cause for some concern in spite of the fact that Utah eleventh graders continue to perform at a level more than a full grade equivalent higher than the national norm group.

Mathematics Achievement Results for Utah Fifth and Eleventh Grade Students - Exhibits 21 and 22. Exhibits 21 and 22 present the results from the four assessments of mathematics between 1975 and 1984. Exhibit 21 shows modest increases in mathematics performance of Utah fifth graders between 1975 and 1981. The 1984 assessment marked a substantial increase in the mathematics performance of Utah fifth graders. As of the 1984 assessment, the typical Utah fifth grader scored at the 65th percentile of the national norm group. This means that the typical Utah fifth grader scores higher than 65% of the students in the national group. When performance is expressed in terms of grade equivalents, Utah fifth graders score just under a full grade equivalent higher than the national norm.

Exhibit 22 presents results on the CTBS mathematics total score for Utah eleventh graders. Eleventh grade scores showed a decline between 1975 and 1978 for the state. Since 1978 rather substantial improvement in mathematics achievement has been noted in the performance of Utah eleventh graders. The 1984 results show that the typical Utah eleventh graders scores at the 57th percentile compared to the national norm of 50. This level of performance is also one full grade equivalent point higher than the national norm.

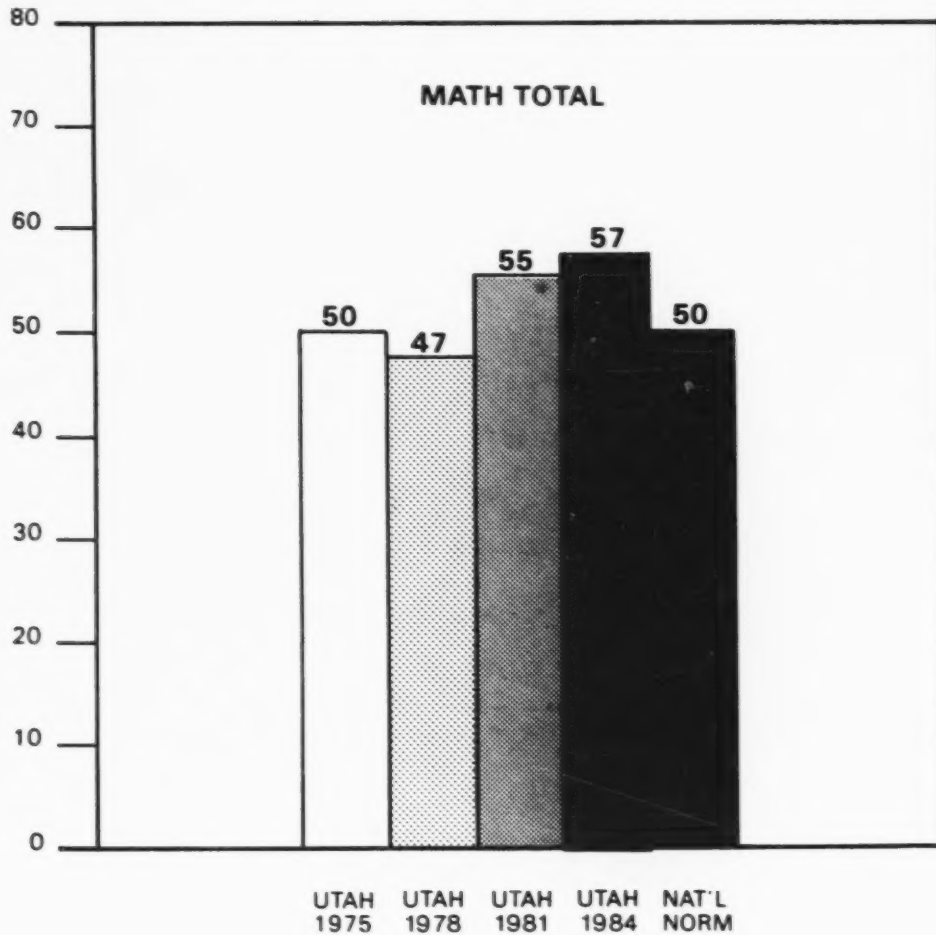
**Changes across Time in Utah Results on
CTBS Mathematics Total, Grade 5**

MEDIAN
NATIONAL
PERCENTILE
RANK



MEDIAN GRADE EQUIVALENT 5.9 6.0 6.1 6.5 5.8

**Changes across Time in Utah Results on
CTBS Mathematics Total, Grade 11**

MEDIAN
NATIONAL
PERCENTILE
RANK

MEDIAN GRADE EQUIVALENT	11.8	11.4	12.7	12.9	11.9

Student Attitudes and Other Characteristics

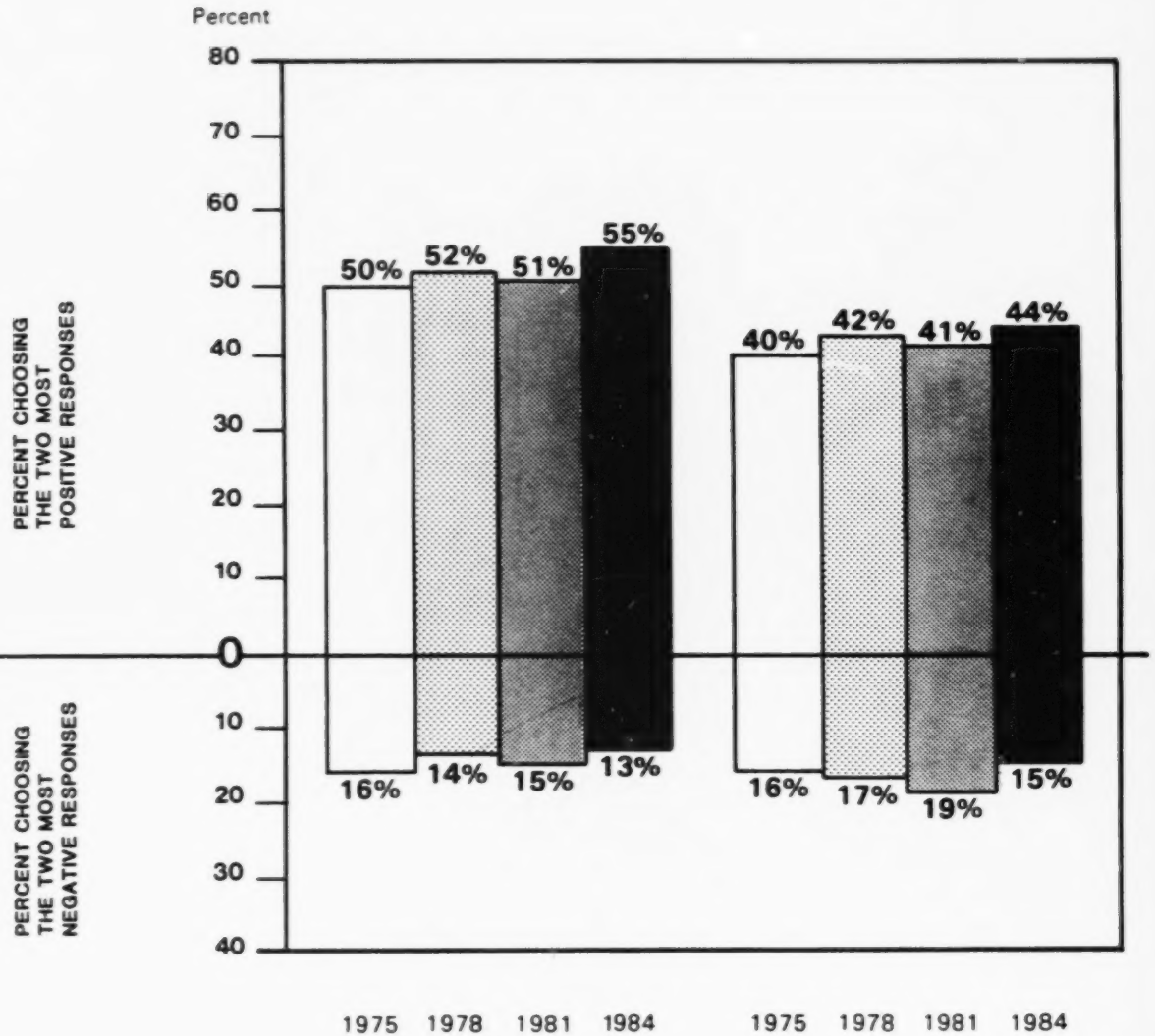
In keeping with the broad spectrum, goal-based philosophy of Utah's Statewide Educational Assessment program, basic skills achievement was only one facet of educational performance measured in the four studies. Several measures were used to assess student educational outcomes in these non-cognitive areas. Results from key scales in these other areas are presented in the following sections.

Results From the Academic Self-Concept Scale - Exhibit 23. The academic self-concept scale is targeted on the areas of enhancing positive self-image and developing an accurate insight into one's own capabilities and limitations. This scale measures students' confidence in their academic abilities by asking them to describe their ability to learn things quickly, to plan, to persevere, to work independently, and to remember. Exhibit 23 shows that the percentages of Utah fifth and eleventh grade students choosing the two most positive responses on the items in this scale have increased at both grade levels between 1975 and 1984. Relatively large percentages of students at both grade levels endorsed positive self-descriptions on this scale, and relatively small percentages marked negative self-descriptions. In general, students have lower academic self-concept scores in the eleventh grade than is observed at grade 5. There apparently is no automatic tendency for students to feel more positive about themselves as learners as they grow older. This emphasizes the importance of school policies and goals which develop success experiences and reduce failure, without lowering standards.

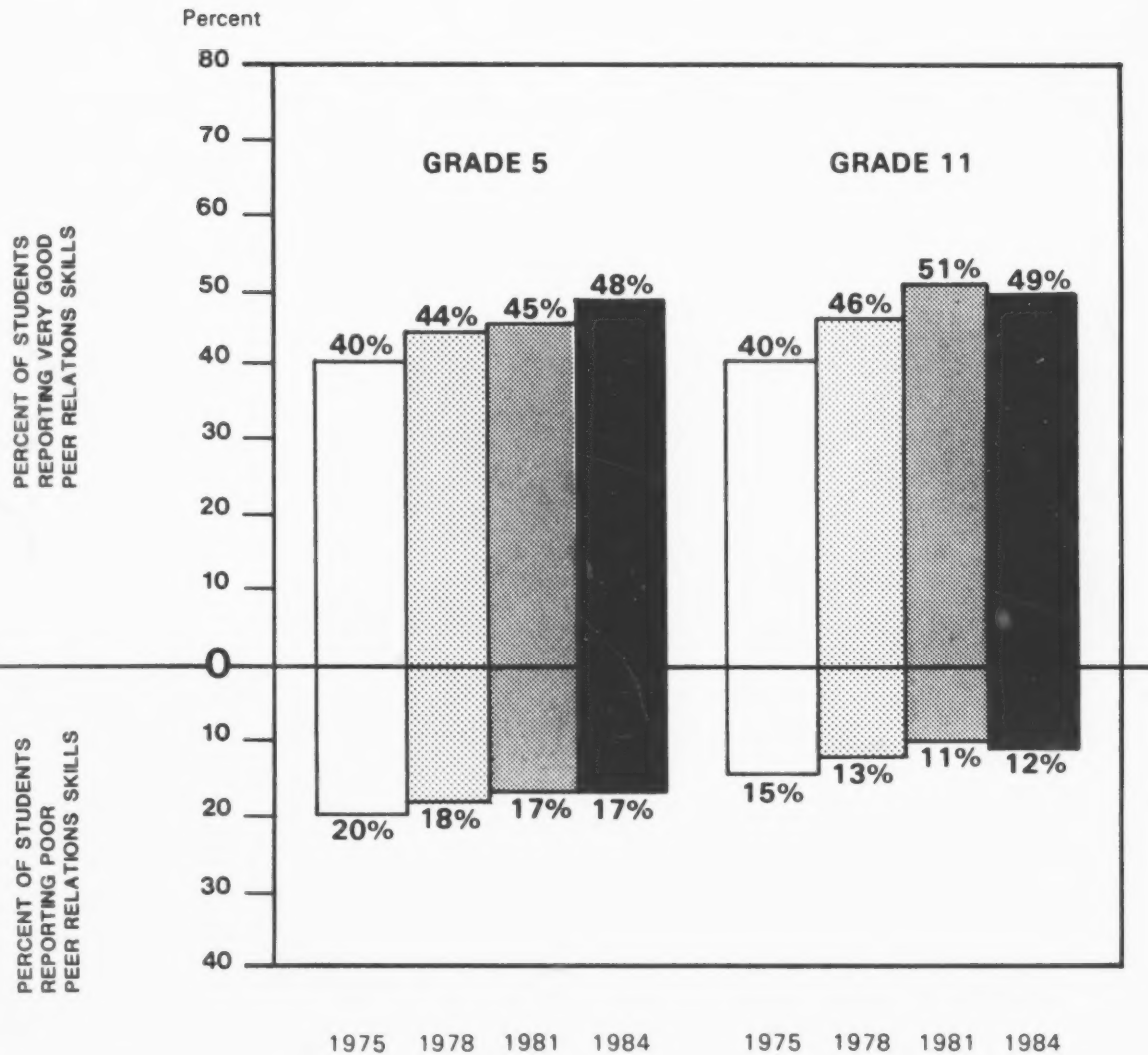
Results From the Peer Relations Scale - Exhibit 24.

The peer relations scale measured students' levels of interpersonal skills including cooperative skills, ability to help others solve problems

Results from the Academic Self-Concept Scale, Grades 5 and 11



**Results from the Peer Relations Scale,
Grades 5 and 11**



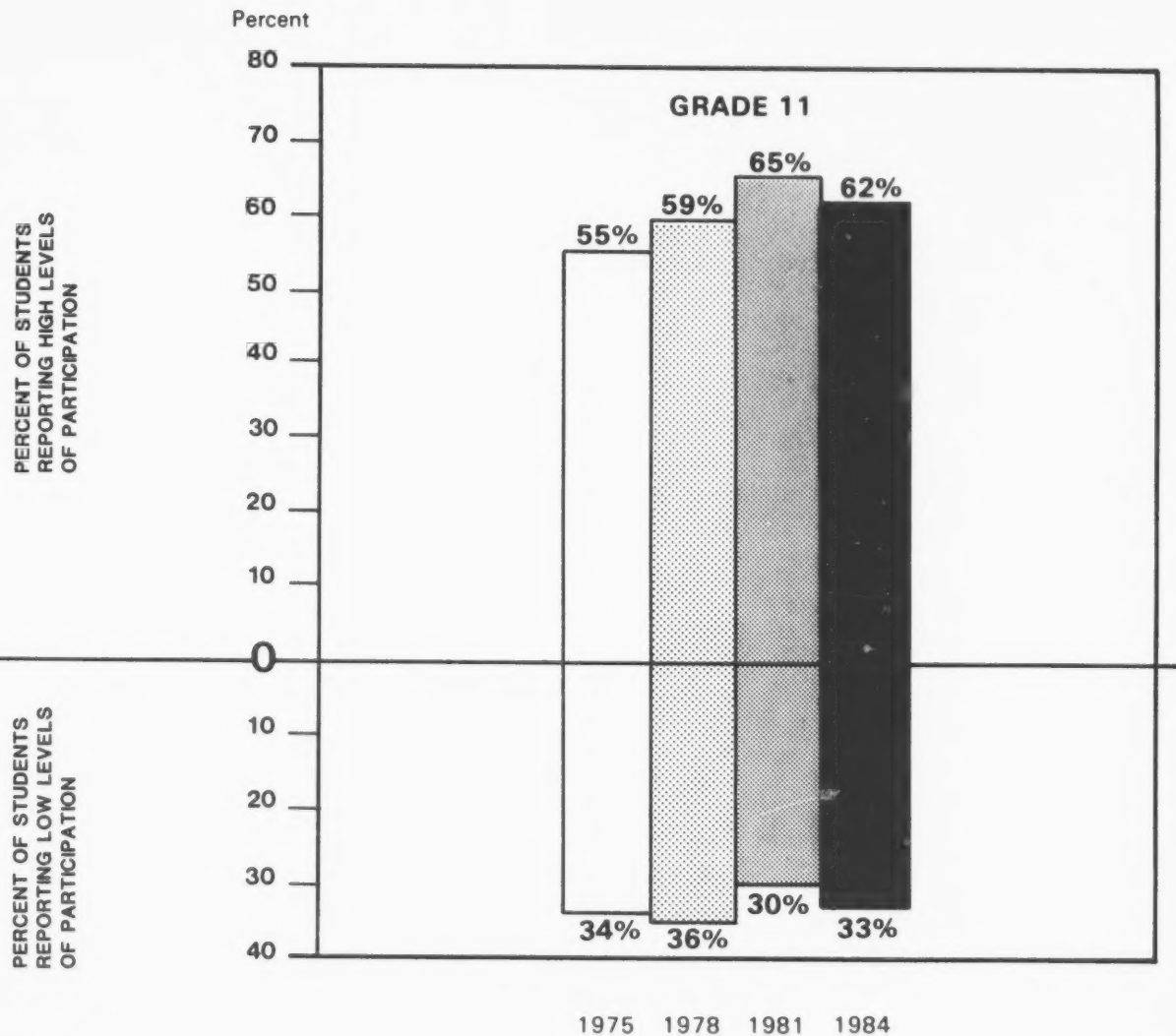
and accomplish tasks, and ability to take responsibility. Exhibit 24 shows that the percentages of students choosing the two most positive self-descriptions in this area have increased systematically at grade five over a ten-year period. Much the same pattern is noted with the eleventh grade results, although a slight decline was noted in 1984. Over the entire period from 1975 to 1984, both fifth and eleventh grade students generally reported increasing peer relations competence, indicating an increasingly effective level of social development for Utah students over the long term.

Results From the Career Awareness and Exploration Scale - Exhibit 25.

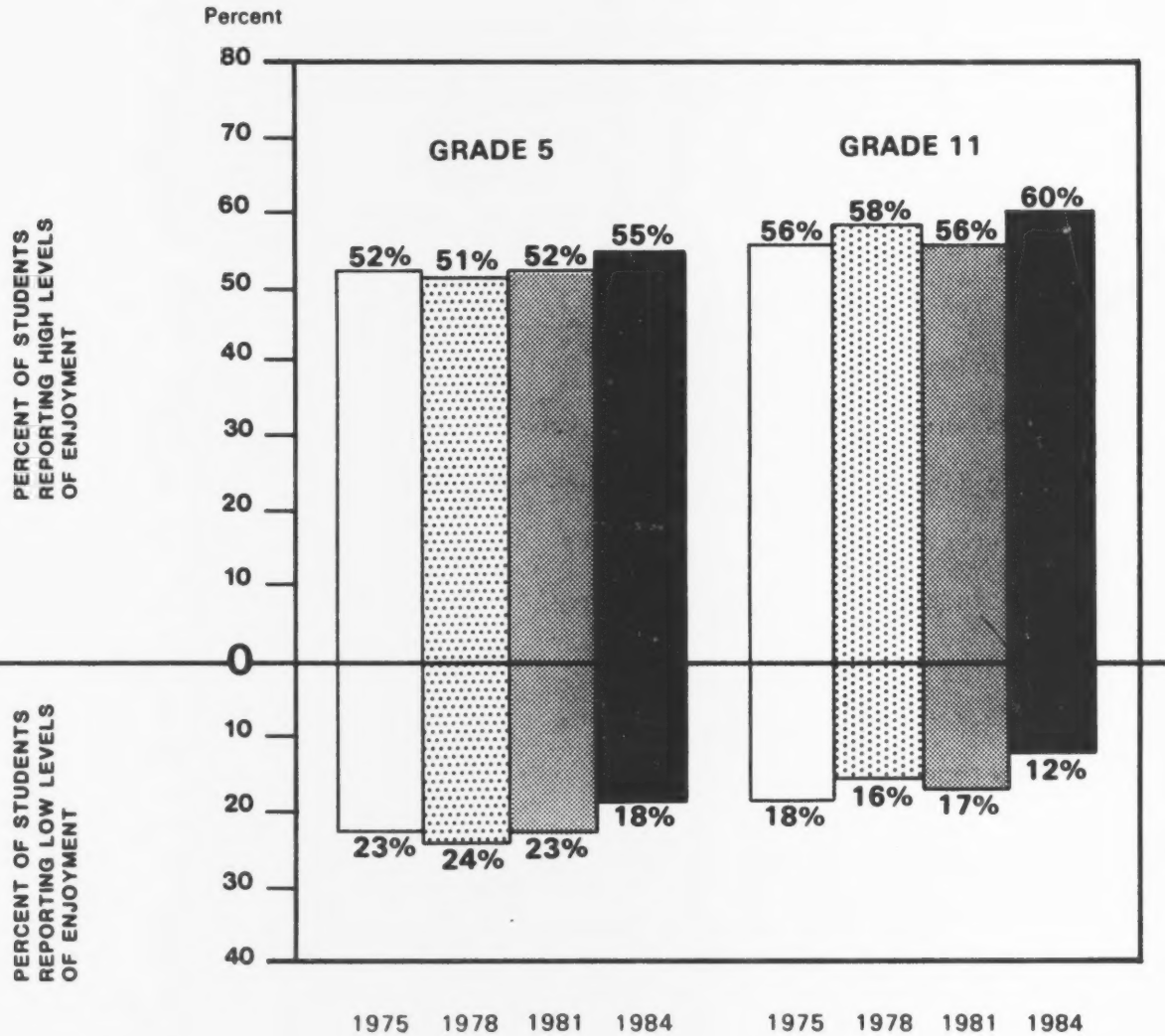
The career awareness and exploration scale was used at the eleventh grade level to measure student awareness, planning, and initiative in dealing with career choices. Students with high scores on this scale had considered what kinds of training or education were necessary for certain jobs, had made some plans about how much education they wanted after high school, and had made some definite plans about a future career or job. Exhibit 25 shows that the scores of Utah eleventh graders on this scale have increased significantly between 1975 and 1984, although the 1984 score levels are somewhat lower than the 1981 scores. A rather disturbing finding from these results is that about one-third of the eleventh graders in any given year had devoted little attention to finding out about and planning a future career. Thus, while these results show that some of the goals of career education are being met and gradual improvement is occurring, there are real opportunities for additional growth. The substantial percentage of students reporting low levels of career awareness could certainly benefit from more emphasis on examining and exploring career opportunities.

Results From the Enjoyment of School Scale - Exhibit 26. Exhibit 26 presents the results for Utah fifth and eleventh graders from the enjoyment

**Results from the Career Awareness and
Exploration Scale, Grade 11**



Results from the Enjoyment of School Scale, Grades 5 and 11



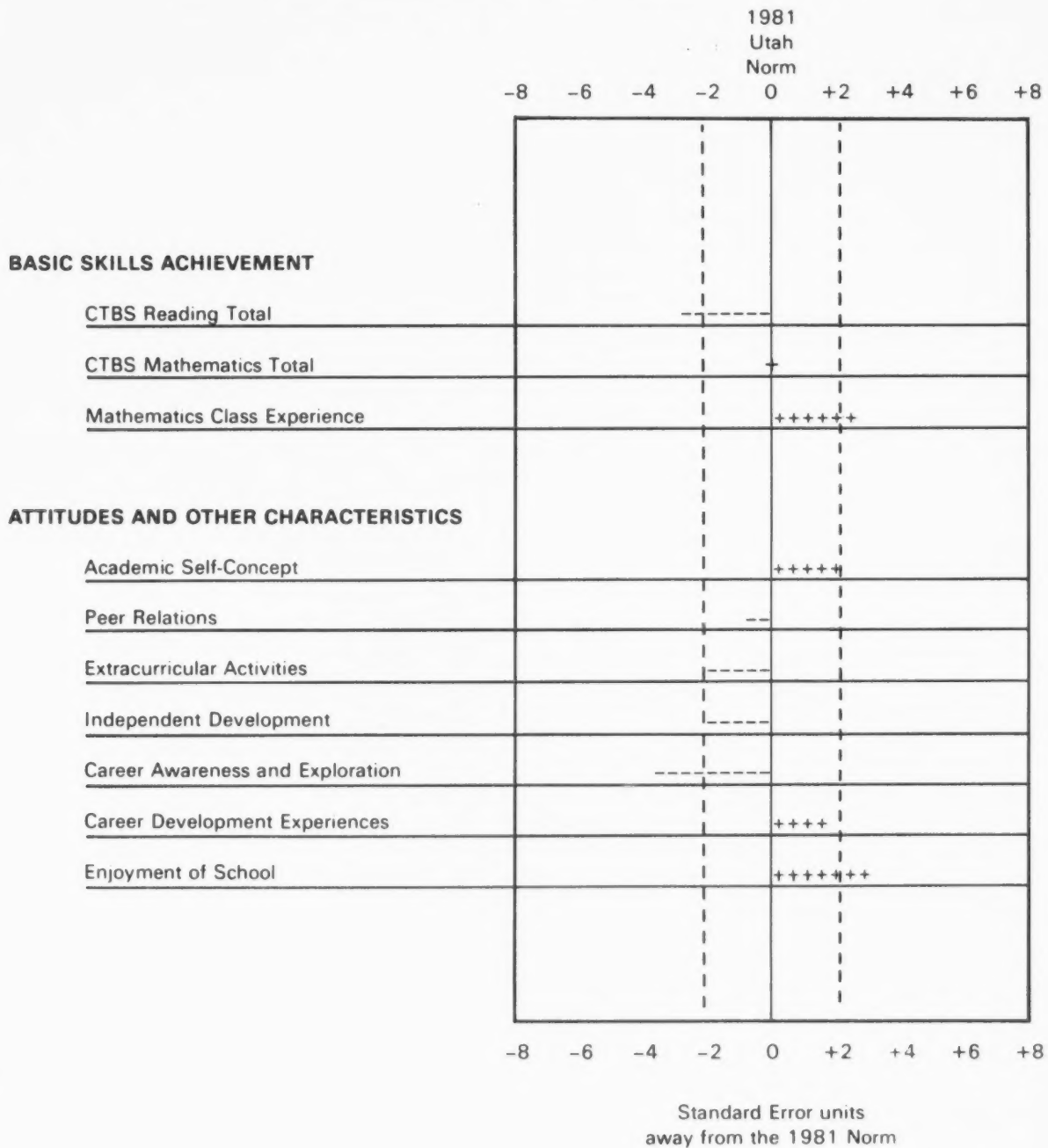
of school scale. Students with high scores on this scale reported that they almost always did a lot of things in school that they enjoyed, often got excited about what was happening in class, and often studied something they enjoyed learning about. The results shown in Exhibit 26 demonstrate significantly greater enjoyment of school scores at both grade levels in 1984 compared to 1975. At both grade levels the average enjoyment of school score is at a ten-year high in Utah. Most Utah students do demonstrate positive attitudes toward school, with only 18% of the fifth graders and 12% of the eleventh graders reporting low levels of enjoyment of school. Furthermore, the results show that eleventh graders were more positive about school than were fifth graders.

Profiles of Changes in Scores - Exhibits 27 and 28. The 1984 Statewide Educational Assessment results highlighted areas which were very strong and areas which could benefit from increased emphasis in the public schools. A comparison of Utah's 1981 and 1984 Statewide Educational Assessments showed different profiles of changes for the fifth and eleventh grade students in the study. Exhibits 27 and 28 present the profiles of results for the fifth and eleventh grade students respectively. In these exhibits, the 1981 result for a measure is always represented as "0", at the center of the charts; a score increase from 1981 to 1984 is shown by a string of + (plus) signs extending to the right of the "0" point, while a decrease from the 1981 results is shown by - (minus) signs extending to the left. The magnitude of the change is shown in "standard error" units. A standard error score equal to or greater than two represents a statistically significant change between 1981 and 1984. For example, Exhibit 27 shows that the fifth grade scores for academic self-concept increased by a statistically significant amount, while the independent development score decreased by a non-significant amount.

Profile of Changes in Scores, 1981-84, Grade 5



Profile of Changes in Scores, 1981-84, Grade 11



At grade 5 there were at least slight increases in six of the nine measures which were used in both the 1981 and 1984 assessments. The greatest increases were noted in mathematics, academic self-concept, peer relations, enjoyment of school, and expectations. Clear decreases were noted in the educational process areas of reinforcement of self-concept and development of career talents.

At grade 11 the results were less positive. Of the ten measures used in both 1981 and 1984, five increased slightly with three of these by statistically significant amounts. The strongest gains were on mathematics class experience, academic self-concept, and enjoyment of school. As was noted earlier, there was a significant decrease on the reading score. Other statistically significant decreases were noted for extra-curricular activities, independent development, and career awareness and exploration.

ADVANCED PLACEMENT PROGRAM RESULTS

The Advanced Placement Program, sponsored by the College Entrance Examination Board, is designed to assist high schools across the nation in meeting the needs of academically gifted students. Advanced Placement (AP) accomplishes this by providing three basic services: first, AP assists high schools in developing college-level courses for the most academically talented students. Second, a national program of testing, scoring, and reporting is provided in the academic areas for which AP furnishes curriculum direction. Finally, test results are provided to colleges specified by students and serve as one criterion for granting students college credit for superior high school achievement.

Participation of Utah students and high schools in the AP program has been extraordinarily high since Utah became affiliated with AP in 1962. On the basis of examinations taken per capita, Utah is consistently the first-ranked state in the Advanced Placement program. Thus, a much higher percentage of Utah students take AP exams than in any other state in the nation. In 1985, 6,148 AP exams were taken by 4,272 Utah students. Those numbers represented nearly 1,500 more exams and nearly 1,000 more students participating in the program than just one year previous. Thus, Utah not only leads the nation in Advanced Placement program participation, but continues to widen its lead over the second-ranked state.

The Advanced Placement Scoring System

Scoring the AP exams has remained much the same since the program's introduction into the state. Each exam is graded and assigned one of the following scores:

- 5 - Extremely well qualified
- 4 - Well qualified
- 3 - Qualified
- 2 - Possibly qualified
- 1 - No recommendation

College credit is granted by all institutions of higher education in the state for scores of 3 or above. Some colleges outside of Utah also award credit for a score of 2.

Advanced Placement Results in Five Subject Areas: 1966-1985

Exhibits 29 through 33 present comparisons between Utah and national Advanced Placement results for the American History, Biology, Chemistry, English, and Mathematics tests for the period from 1966 through 1985. Each exhibit portrays the results for students who elected to take the AP test in a particular subject area. For each of the years presented, the total number of students taking the subject area test is displayed, as is the average (mean) grade obtained by that group of students and the percentage of students who received a "qualified" grade of 3 or higher.

American History - Exhibit 29. The performance of Utah students of the Advanced Placement History over the twenty-year period portrayed in Exhibit 29, has consistently improved from the mid 1960's to a high realized in 1985. The 1985 Utah average is actually higher than the national average for the most recent results. Given the very large increase in the number of Utah students taking the American History test between 1982 and 1985, the fact that the state average exceeds the national average is a significant achievement. The number of Utah students taking the AP American History test has risen dramatically over the twenty-year period shown in Exhibit 29 from a low of 132 students taking the test in 1967, to a high of 1,632 in 1985.

Utah and National Advanced Placement Results in American History, 1966-85

UTAH				NATIONAL		
Year	Total Students	Mean Grade	Percent* Qualified	Total Students	Mean Grade	Percent* Qualified
1966	158	2.1	48%	8,873	2.8	64%
1967	132	2.5	44%	8,935	2.9	65%
1968	189	2.6	50%	10,608	3.0	69%
1969	284	2.4	42%	11,837	3.0	69%
1970	342	2.5	41%	12,056	3.0	65%
1971	—	—	^b	12,591	3.0	69%
1972	449	2.5	40%	12,964	3.0	61%
1973	407	2.6	45%	12,720	3.0	64%
1974	435	2.6	49%	14,331	3.0	65%
1975	482	2.7	54%	16,068	3.1	67%
1976	476	2.8	60%	18,718	3.1	68%
1977	482	2.9	58%	21,325	3.1	68%
1978	490	2.8	55%	24,444	3.2	70%
1979	655	2.7	51%	28,222	3.1	67%
1980	670	2.7	53%	32,098	3.1	67%
1981	755	2.7	51%	35,999	3.1	66%
1982	830	2.9	58%	38,286	3.1	66%
1983	1,015	2.9	62%	43,844	3.1	67%
1984	1,358	3.0	60%	49,939	3.1	66%
1985	1,632	3.1	66%	58,932	3.1	65%

*Percent of total students who qualified with a grade of three (3) or higher.

^b1971 results for Utah were not available.

Biology - Exhibit 30. Both state and national averages on the Biology test have risen gradually from the mid 60's through the present time. In recent years, state and national averages are rather close, but favor the national group slightly. The Biology test is taken by far fewer Utah students than is the English or American History test. The 1985 results do show, however, a substantial rise in the number of Utah students taking the test with 567 doing so. This is nearly a 500% increase over the number of students taking the same test ten years earlier.

Chemistry - Exhibit 31. The number of students within the state and nationally taking the AP Chemistry test has grown substantially from 1966 through the present. This test still remains far less popular than the other academic core AP areas, however. The performance of Utah students on the Chemistry test has been quite consistent for the entire twenty-year period and is very much like the national profile. In the most recent results, Utah students taking the Chemistry test achieved an average score of 2.7 with 52% of the students taking the test achieving a grade of 3 or above.

English - Exhibit 32. The same gradual upward trend noted for the American History AP test results within the state is evident in the AP English results as well. From a low of 37% of Utah students qualifying in 1966, performance of students in the state has risen to a high of 3.0 in 1985 with 68% qualifying. As with the other AP tests examined, the participation of Utah students in the English test has risen substantially between 1982 and the present.

Mathematics - Exhibit 33. The popularity of the Advanced Placement Mathematics test has risen tremendously between 1966 and 1985. In the most recent results, 829 Utah students took the Advanced Placement test compared to some 422 in 1982. Since 1975 Utah students taking the mathematics test

Utah and National Advanced Placement Results in Biology, 1966-85

UTAH				NATIONAL		
Year	Total Students	Mean Grade	Percent* Qualified	Total Students	Mean Grade	Percent* Qualified
1966	62	2.2	37%	3,031	2.7	53%
1967	67	2.3	35%	3,324	2.6	51%
1968	46	2.1	32%	3,891	2.7	57%
1969	97	2.2	33%	4,449	2.8	60%
1970	84	2.4	42%	4,490	2.9	67%
1971	—	—	"	5,158	3.0	65%
1972	85	2.9	71%	5,967	3.0	68%
1973	97	2.9	70%	5,764	3.2	78%
1974	78	2.9	71%	7,411	3.1	74%
1975	113	2.8	66%	8,206	3.3	77%
1976	130	2.9	71%	9,482	3.3	79%
1977	103	3.3	81%	10,530	3.4	80%
1978	97	3.1	63%	11,342	3.4	80%
1979	130	2.9	64%	12,835	3.3	78%
1980	170	2.9	65%	13,549	3.3	77%
1981	177	3.1	69%	15,199	3.4	77%
1982	219	3.1	68%	15,947	3.2	76%
1983	240	3.1	73%	17,804	3.3	75%
1984	377	3.0	69%	19,387	3.3	75%
1985	567	2.9	66%	22,801	3.1	70%

*Percent of total students who qualified with a grade of three (3) or higher

*1971 results for Utah were not available

Utah and National Advanced Placement Results in Chemistry, 1966-85

UTAH				NATIONAL		
Year	Total Students	Mean Grade	Percent* Qualified	Total Students	Mean Grade	Percent* Qualified
1966	50	2.9	78%	3,516	3.1	78%
1967	56	2.8	64%	3,824	2.9	67%
1968	61	2.8	70%	3,874	2.9	76%
1969	76	2.8	69%	4,205	2.8	70%
1970	90	2.7	68%	4,005	2.9	71%
1971	—	—	—	3,996	3.0	76%
1972	99	2.8	61%	3,741	3.0	67%
1973	85	2.8	61%	3,447	3.0	68%
1974	112	3.0	77%	3,802	3.0	70%
1975	89	2.8	64%	4,181	3.1	70%
1976	134	2.9	59%	5,341	3.1	71%
1977	115	2.9	63%	5,559	3.1	71%
1978	119	3.0	72%	6,270	3.1	70%
1979	153	2.6	63%	7,016	3.1	69%
1980	193	2.9	61%	8,209	3.1	69%
1981	191	2.9	67%	8,877	3.0	69%
1982	164	2.7	57%	9,476	3.0	68%
1983	190	3.0	65%	10,291	3.1	68%
1984	221	3.0	70%	11,539	3.0	68%
1985	393	2.7	52%	13,352	2.9	62%

*Percent of total students who qualified with a grade of three (3) or higher

*1971 results for Utah were not available

Utah and National Advanced Placement Results in English, 1966-85

UTAH				NATIONAL		
Year	Total Students	Mean Grade	Percent* Qualified	Total Students	Mean Grade	Percent* Qualified
1966	446	2.3	37%	16,266	2.9	63%
1967	522	2.6	52%	18,383	2.9	61%
1968	585	2.8	62%	20,531	3.1	71%
1969	796	2.7	60%	23,691	3.1	74%
1970	924	2.7	62%	25,220	3.1	74%
1971	—	—	^b	25,255	3.1	75%
1972	840	2.8	66%	24,807	3.1	77%
1973	832	2.7	60%	22,422	3.1	74%
1974	913	2.7	56%	24,131	3.1	70%
1975	797	2.7	60%	25,656	3.1	72%
1976	911	2.8	59%	29,503	3.1	71%
1977	937	2.9	66%	32,142	3.1	72%
1978	1,090	2.9	67%	36,334	3.1	73%
1979	1,153	2.9	61%	41,975	3.1	70%
1980	1,081	2.9	67%	45,082	3.1	70%
1981	1,162	2.9	65%	48,605	3.1	70%
1982	1,085	2.9	63%	51,128	3.1	69%
1983	1,258	3.0	69%	56,432	3.1	70%
1984	1,416	3.0	69%	60,969	3.1	70%
1985	1,654	3.0	68%	68,590	3.1	68%

*Percent of total students who qualified with a grade of three (3) or higher

^b1971 results for Utah were not available

EXHIBIT 33

Utah and National Advanced Placement Results in Mathematics, 1966-85

UTAH				NATIONAL		
Year	Total Students	Mean Grade	Percent* Qualified	Total Students	Mean Grade	Percent* Qualified
1966	92	1.9	24%	9,630	2.6	49%
1967	101	2.4	39%	10,675	2.5	46%
1968	150	2.2	37%	11,623	2.6	51%
1969	139	2.5	50%	10,280	2.7	53%
1970	143	2.5	44%	10,273	2.7	52%
1971	—	—	^b	10,468	2.8	53%
1972	200	2.7	57%	10,611	2.8	59%
1973	207	2.9	59%	9,871	2.9	59%
1974	274	2.8	62%	11,213	2.8	60%
1975	277	3.1	72%	11,804	3.0	66%
1976	254	3.2	75%	13,076	3.0	67%
1977	331	3.2	71%	14,089	3.0	65%
1978	317	3.1	71%	15,774	3.0	67%
1979	348	3.3	76%	17,615	3.0	68%
1980	361	3.1	73%	20,096	3.0	69%
1981	463	3.1	72%	22,537	3.1	70%
1982	422	3.2	74%	23,825	3.1	70%
1983	518	3.2	73%	26,706	3.1	70%
1984	616	3.2	74%	30,583	3.1	72%
1985	829	3.2	71%	36,282	2.9	61%

*Percent of total students who qualified with a grade of three (3) or higher

^b1971 results for Utah were not available

have demonstrated somewhat higher scores than the national group of AP test-takers. For example, in 1985, 71% of the Utah students qualified on this test compared to 61% nationally. The upward trend for Utah students is impressive indeed, starting from an average grade of 1.9 and 24% qualifying in 1966, to the present average of 3.2 with 71% qualifying.

Overview of the Utah Advanced Placement Program and Student Performance

The most remarkable aspect of the Advance Placement Program in the state of Utah is the access to the program and actual participation by Utah students. Utah has a higher per-capita participation rate than any other state in the nation in AP. This means it is likely that many more Utah students with lower academic ability participate in the AP program than would be the case in other states. In spite of this fact, the Utah average scores in the five most popular AP tests compare rather favorably with the national averages over a twenty-year period. In fact, in the face of this very high participation rate, Utah scores actually exceed those of the national group in several areas.

Looking only at absolute numbers, Utah had more students participating in AP than states with four to five times Utah's population. This high degree of access to programs for the academically gifted, as well as the high actual participation rate, constitute a significant element of the state's total secondary program. The most recent AP figures show that close to 15% of the students entering Utah's colleges have already, through the AP program, earned college credit.

ADULT EDUCATIONAL ATTAINMENT IN UTAH

The United States Census of 1970 and 1980, as well as the 1976 Survey of Income and Education accomplished by the Bureau of the Census, provide some indicators of educational attainment for Utah and the nation. Exhibit 34 shows a comparison of the findings of the 1970 census, the 1976 Survey of Income and Education, and the 1980 Census. In both 1970 and 1976, Utah was ranked first among the fifty states in the percentage of its population over 25 holding a high school diploma. In 1980 Utah was second-ranked among all fifty states, being surpassed only by Alaska. The percentage of adults holding a high school diploma rose steadily within the state over the decade with 67.3% holding at least a high school diploma in 1970 compared to 80% in 1980.

Exhibit 34 also shows the median years of education for 1970, 1976, and 1980 for both the state and the nation. This analysis shows Utah ranked first among the fifty states at all three points in time. The median years of education for Utah adults increased from 12.5 to 12.8 during the decade, while the national median increased from 12.2 to 12.5. These census-based indicators continue to demonstrate that the state provides a very large percentage of its population with the opportunity to complete secondary education and pursue postsecondary education.

EXHIBIT 34

**UTAH VERSUS NATIONAL ADULT EDUCATIONAL
ATTAINMENT FOR 1970, 1976, AND 1980**

A. Percentage of population over 25 with a high school diploma.^a

1970			1976			1980		
Utah Percentage	Utah's Rank in Nation	National Percentage	Utah Percentage	Utah's Rank in Nation	National Percentage	Utah Percentage	Utah's Rank in Nation	National Percentage
67.3%	1st	52.3%	78.9%	1st	63.8%	80.0%	2nd	66.3%

B. Median years of education

1970			1976			1980		
Utah Median Years	Utah's Rank in Nation	National Median Years	Utah Median Years	Utah's Rank in Nation	National Median Years	Utah Median Years	Utah's Rank in Nation	National Median Years
12.5	1st	12.2	12.8	1st	12.5	12.8	1st	12.5

^aIncludes all those who are high school graduates, as well as those who are college graduates or have some college.

SOURCES: 1970 United States Census
1976 Survey of Income and Education
1980 United States Census

COURSES TAKEN BY UTAH SENIOR HIGH SCHOOL STUDENTS

A recent addition to the Survey of Intentions and Accomplishments of Utah High School Seniors, conducted annually by the State Office of Education, is a section which allows Utah educators to appraise the course-taking patterns of seniors in the state. When these results are available over an extended period of time, they should provide one important source of information in appraising the impact of new state and district graduation requirements, as well as more rigorous college admissions standards which have all been put in place during the last several years.

Profile of the Grade 10-12 Programs of Utah High School Seniors - Exhibit 35. Exhibit 35 presents a picture of the course-taking patterns of Utah high school seniors in several major areas of secondary education. Contrasts are drawn between those students who have taken at least two years of each subject as well as students who have taken at least three years of a particular subject. Definite trends are apparent in three of the curriculum areas presented in Exhibit 35. Much higher percentages of students are taking at least two years of foreign language, mathematics, and science in 1985 than was true in 1984. This same finding was true of students taking at least three years, but the magnitude of the differences between 1984 and 1985 is not as great.

Specific Courses Taken by Utah High School Seniors - Exhibit 36. Exhibit 36 profiles the percentages of Utah high school seniors taking specific courses in mathematics, and science, as well as honors or AP courses in several curriculum areas. These results show clear increases in the percentage of students taking every course in the typical math sequence consisting of algebra I, algebra II, geometry, trigonometry, and calculus.

EXHIBIT 35

**Profile of the Grade 10-12 Programs
of Utah High School Seniors**

Subject Area	Percentage of Utah High School Seniors Who Have Taken at Least:			
	<u>Two Years of Subject</u>		<u>Three Years of Subject</u>	
	1984	1985	1984	1985
English or Literature	94.7%	93.9%	79.6%	78.0%
Foreign Language	11.6%	17.1%	4.0%	4.9%
History/Social Studies	83.2%	82.2%	24.7%	26.6%
Mathematics	65.7%	72.9%	27.7%	32.1%
Science	47.8%	54.2%	15.0%	17.7%
Art	13.5%	13.8%	5.2%	5.6%
Music	20.5%	19.8%	12.6%	11.9%
Physical Education	59.9%	58.7%	30.5%	29.4%

Source: Survey of the Intentions and Accomplishments of Utah High School Seniors, 1984 and 1985.

**Percentages of Utah High School Seniors Who Have
Taken Selected Specific Courses**

Course	Percentage of Seniors Who Have Taken Course	
	1984	1985
Algebra I	78.7%	83.4%
Algebra II	48.2%	54.6%
Geometry	48.3%	54.7%
Trigonometry	24.7%	29.4%
Calculus	8.4%	10.4%
Applied Math	27.8%	27.3%
Physics	14.2%	17.0%
Chemistry	26.7%	30.5%
Applied Science	32.0%	34.6%
Computer Science	28.0%	35.1%
Honors / AP History	15.6%	17.1%
Honors / AP English	21.0%	25.1%
Honors / AP Math	10.1%	11.6%
Honors / AP Biology	7.5%	7.5%
Honors / AP Chemistry	3.3%	4.4%

Source: Survey of the Intentions and Accomplishments of Utah High School Seniors, 1984 and 1985

Physics and chemistry also show growth in enrollment between 1984 and 1985 as does computer science. More students are enrolling in honors and Advanced Placement courses in history, English, mathematics, biology and chemistry in 1985 than was true in 1984.

An overview of the results presented here suggests that Utah high school students are indeed enrolling in significantly more courses in several areas of the curriculum which have been stressed in recent changes in high school graduation requirements and college admissions statements. The chief beneficiaries here are mathematics, science and foreign language, while areas such as music and physical education have actually shown slight decreases in enrollment.

THE NATIONAL AND INTERNATIONAL PICTURE: NATIONAL ASSESSMENT
AND INTERNATIONAL EVALUATION STUDY FINDINGS

The National Assessment of Educational Progress (NAEP)

The National Assessment of Educational Progress has, since 1969, gathered educational achievement information describing the performance of students across the nation who were ages nine, thirteen, and seventeen, as well as young adults. Assessment has taken place in ten areas including art, career and occupational development, citizenship, literature, mathematics, music, reading, science, social studies, and writing. This effort, which produces a truly representative national profile of achievement in key areas, is unique in the history of educational testing in this country or any other. The results produced provide an extremely helpful picture of national trends in key achievement areas. The following sections present an overview of important results from NAEP assessments.

National Performance Trends

Reading. NAEP has assessed reading four times during the last fifteen years (1971, 1975, 1980, and 1984). During this period of time the following general trends have emerged from analysis of National Assessment reading achievement information:

- ° Students at ages nine, thirteen, and seventeen were better readers in 1984 than students at the same ages were in 1971. Nine and thirteen-year-olds improved through the 1970's and seventeen-year-olds improved between 1980 and 1984. The recent improvements by seventeen-year-olds may in part reflect earlier improvements at ages nine and thirteen.
- ° Black and Hispanic students, as well as those living in disadvantaged communities, have made sizeable improvements.
- ° Virtually all thirteen and seventeen-year-olds can read basic material, and 84% of the seventeen-year-olds still in school have acquired the intermediate reading skills and strategies necessary

to understand specific and general information in relatively lengthy reading passages.

- ° Nine and thirteen-year-olds did not show improvements between 1980 and 1984, halting the upward trend in performance at these ages during the 1970's.
- ° The marked improvement in the achievement of minority and disadvantaged urban students between 1971 and 1984 has reduced the gap between their performance and that of other students. Still, the average reading proficiency of these students is quite low and in need of further improvement. For example, the average reading proficiency of black and Hispanic seventeen-year-olds is only slightly higher than that of white thirteen-year-olds.
- ° Six percent of nine-year-olds in 1984 could not do rudimentary exercises and are in danger of future school failure. Forty percent of thirteen-year-olds and 16% of seventeen-year-olds attending high school have not acquired intermediate reading skills and strategies, raising the questions of how well these students can read the range of academic material they are likely to encounter in school. Few students, only about 5%, even at age seventeen, have advanced reading skills and strategies. [pgs. 6 & 7]

Mathematics. Mathematics has been assessed three times during the last fifteen years (1973, 1978, and 1982). Between 1978 and 1982 the performance of nine-year-olds and thirteen-year-olds improved for both the total national samples as well as virtually every sub-classification including all ethnic groups and students at all levels of ability. Performance of seventeen-year-olds, on the other hand, declined a very slight amount during this same period as did the overall performance of whites and students in the mid and high ability ranges. The following generalizations can be drawn about the most recent assessment of mathematics:

Of the three age groups, only the thirteen-year-olds improved significantly in overall mathematics performance between 1978 and 1982. Significant gains for thirteen-year-olds were made across all racial/ethnic groups, achievement quartiles, community types, and in both heavily minority and predominately white schools. Most noteworthy are the groups that showed improvements in performance greater than the 3.8% increase attained by thirteen-year-olds overall; these groups include blacks, Hispanics, low achievers, students in heavily minority schools, and urban community residents. For nine and seventeen-year-olds, although performance in mathematics was in general unchanged in 1978 and 1982, seventeen-year-olds in heavily minority schools improved significantly in the mathematics assessment period. [pg. 12]

Science. Science has been assessed four times since the establishment of NAEP (1970, 1973, 1977, and 1982). Slight downward trends were noted between the first and second assessments of science (1970 and 1973), only the seventeen-year-olds showed a decline between the second and third assessment (1977), while the overall performance of the nine-year-old and thirteen-year-old groups was rather constant between the second and third assessments. Looking at the two most recent assessments of science, the following generalizations can be made:

Across all age groups in science areas, the only statistically significant gains reported were for nine-year-olds in the area of science, technology, and society. Both males and females showed improvement; white males in particular registered significant gains.

Significant changes also occurred among the seventeen-year-olds whose performance declined in the content and inquiry assessment areas.

Between 1977 and 1982, thirteen-year-olds showed no significant changes in science performance. Overall, science performance showed minimal changes or mixed results in all age groups. And only among the younger students did scientific knowledge as it relates to themselves and the world, appear to be increasing. [pg. 13]

Social Studies. NAEP has conducted two assessments of social studies (1972 and 1976). The period between these two studies saw no change in the total performance of the nine-year-old group, while the performance of thirteen-year-olds declined very slightly, and seventeen-year-old performance declined somewhat to a greater degree. In all three age groups, items measuring political knowledge declined between the two assessments. Martin (1981) illustrates some of the social studies findings from the two assessments:

While nearly all the students in both assessments could name the President of the United States, in the second assessment slightly less than one-half of the seventeen-year-olds could name either their congressperson or one of their senators, a decline of nine percentage points from 1969. About one-fifth of the thirteen-year-olds in either assessment could successfully identify one of their representatives from either the U.S. House of Representatives or the

U.S. Senate. In the second assessment, 64% of the thirteen-year-olds and 81% of the seventeen-year-olds knew a senator was elected to office. [pg. 3]

Writing. The NAEP writing assessments have been conducted at three points including 1970 and 1979, with an interim assessment in 1974. Interestingly, the National Assessment results from these three studies have found no major changes in the writing abilities of students during the decade. Martin offers the following analysis:

The majority of students at age nine, thirteen, and seventeen demonstrated control over the basic conventions of writing. However, a sizeable minority (from 10% to 25%) at each age appeared to have very serious problems with writing; their papers contained two to three times as many errors as the average paper written by students their age. [pg. 1]

The seventeen-year-old group wrote in a more coherent fashion in 1979 than they did in 1970. This high school group used more transitions in their stories, and produced more coherent paragraphs in descriptive essays than their counterparts a decade earlier. Martin offers some insight into why writing may not be stressed (as much as would be desirable) in the schools with the following observation:

Writing instruction continues to be considered the responsibility only of English teachers instead of an activity that pervades the entire curriculum. Additionally, many teachers deprive students of writing opportunities by relying on multiple-choice, true-false, or short-answer tests and shying away from essay tests. Many people teaching English were trained in other subjects and know little about teaching writing; many teachers trained to teach English have had little training in composition or writing; and many English teachers perceive themselves as "literature teachers," not writing teachers, and focus on the products of writing instead of the process. Finally, fewer writing assignments are given because of the time required to read and critique such assignments and many teachers feel -- justifiably in most cases -- that they do not have the time required. Yet writing is a skill that requires practice. [pg. 1]

The Arts. Both the visual arts and music have been assessed twice during the decade of the 70's. Results from the assessments of visual art showed that the performance of nine-year-olds remained essentially

stable between 1975 and 1979, while that of the thirteen and seventeen-year-old age groups declined slightly in this same period. The decreases were largely attributed to declines in students' "valuing" of art and the importance they placed upon art, as well as their willingness to accept all kinds of art, not just the traditional art forms. NAEP (1982) has the following summary in respect to art education:

While the primary focus of art education at all levels in schooling is on providing art-making experiences, the NAEP art experts concluded that on design and drawing tasks measured by National Assessment, "the majority of students do not appear to design or draw particularly well." Improvements in performance with age and number of art classes taken indicate that design and drawing skills can be taught and are not solely the function of a youngster's innate creativity. [pg. 2]

The two assessments of music (1972 and 1979) showed that, in general, American students have positive attitudes about music and many have actually performed in school music groups. On the other hand, the music knowledge of both the nine and seventeen-year-old age groups declined between the two assessment periods, while that of the thirteen-year-old age group remained constant. The national declines were attributed to diminishing knowledge about the elements of music and how such elements are represented symbolically. The area of knowledge of music styles and history remained essentially stable between the two assessments. NAEP (1982) offers some suggestions as to why the results in music emerge as they do:

Members of the (NAEP) music interpretative panel attributed the lack of growth on items about musical elements and symbols to the fact that general music classes, where these concepts are usually taught, are often required courses for middle or junior high students but either are not available or not required for senior high school students. Students may learn about music history and music styles by listening to music or through classes other than music classes, panel members agreed. Not particularly alarmed by the relatively low percentages able to classify music by historical period, the panel pointed out that very few high schools offer the kinds of music history courses that would equip students to answer these questions. [pg. 3]

The NAEP Analysis of Literacy in America. Brown (1981) has examined the implications of National Assessment findings for an estimate of the "literacy" of American students. Clearly, there is no totally acceptable definition of "literacy," but the author does make some extremely important points in respect to the differences between the fundamental skills and higher level skills possessed by young Americans. Brown's conclusion is the following:

The assessment results show that most seventeen-year-olds possessed basic literacy skills. The proportions of disadvantaged young people who have acquired these skills are still lower than the proportions of advantaged teenagers, but that gap narrowed through the 1970's. The results also show that the proportion of teenagers demonstrating higher-level cognitive skills has been declining through the 1970's. Our education system appears to be doing an adequate job of inculcating basic skills, but losing ground with respect to high-level skills. [pg. 10]

International Studies in Evaluation: Academic Performance of Students in the United States and Other Countries

One of the most ambitious studies of academic achievement ever attempted was the effort to study the characteristics of education around the world called the "International Studies in Evaluation." Although the number of countries participating varied by the topic of the inquiry, fifteen or more countries participated in every major aspect of the study. The great majority of these countries were the highly developed and urbanized countries of Europe, however, the study also included the United States, Japan, Israel, Chile, India, Iran, and Thailand.

One of the important insights furnished by this massive effort was the clear demonstration that the United States, perhaps more than any other country, has an education system which reaches virtually all its young people. This is in marked contrast to the majority of other countries

studied where diminishingly small percentages of students remain in the educational system past the age of fourteen. Tyler (1981) makes the point very graphically:

At the time of the cross-national testing program, the U.S. retained 78% of the age group through the final year of secondary school, while Japan retained 70%, Sweden 65%, Australia 29%, Hungary 28%, England 20%, Scotland 17%, New Zealand 13%, The Netherlands 13%, and Germany 8%. [pg. 308]

The above illustrates the massive experiment in educational opportunity for all which has characterized education in the United States and sets the U.S. system apart from the "education for the elite" approaches of many countries.

Summary of Key Findings From the International Evaluation Studies

One of the most interesting findings of the International Evaluation effort pertained to a special group of students consisting of the top 5% academically of each participating country. In respect to this group, Tyler offers the following conclusion: ". . . the top 5% of U.S. young people attain the same high scores reached in nations where advanced schooling is reserved for an elite." [pg. 307]

Perhaps the fairest comparison across countries was obtained by an examination of students in the study's fourteen-year-old group. Typically children of that age are still in school in most modern nations. Thus, results from that group give a reasonable approximation of performance for any developed country. Two of the key curriculum areas in the International Studies were reading comprehension and science. For the fourteen-year-old group mentioned above, the United States ranked third among the fifteen nations tested. Only Japan and Italy had higher scores on reading comprehension for students at this level. Another key curriculum area, science,

showed a rather similar pattern for fourteen-year-olds. Here, the United States was fourth among sixteen nations tested. U.S. scores were lower than those of Japan, Hungary, and West Germany.

In mathematics, results from the First International Evaluation Study showed that, while children from nearly all developed nations had mastered the basic operations by age fourteen, only Japanese children were highly skillful in dealing with the application of computational skills to real world problems. As in other curriculum areas, the top 5% of U.S. high school seniors performed extremely well compared to the other countries in mathematics. However, the average math score for the American high school seniors tested was the lowest among the nations included in this part of the study. This fact appears highly related to the low selectivity of the American high school with over 78% of those beginning school in the United States still in school as seniors. Still, it must be noted that the Japanese, who retain 70% of their students through high school graduation, performed rather well in mathematics.

The Second International Study of Mathematics Performance took place in 1981 and 1982. Some of the key findings dealing with mathematics achievement were the following:

- ° United States students (in grade 8) were slightly above the international average in computational arithmetic (calculation) and well below the international average in non-computational arithmetic (e.g. problem solving).
- ° By the end of eighth grade, U.S. achievement in algebra was comparable to the international average.
- ° U.S. achievement in Geometry ranked in the bottom 25% of all countries, reflecting to a large extent low coverage through the end of the eighth grade.
- ° Achievement of the statistics items on the international test was at about the international average.

- ° The achievement (of twelfth grade students) of the calculus classes which were the nation's best mathematics students, was at or near the average achievement of the groups of senior secondary school mathematics students in other countries.
- ° The U.S. pre-calculus students (the majority of twelfth grade mathematics students) achieved at a level which was substantially below the international mean scores for all countries in the study and in some cases were ranked with the lower one-fourth internationally. [pgs. viii & ix]

Tyler offers the following analysis of the total International Evaluation effort:

This review of cross-national data on educational achievement indicates that the U.S. educational system has clearly been responsive both to the rapid changes in society and to its basic democratic ideology. It has reached a larger proportion of its young people than almost all other nations, while its top 5% have attained the same high scores by nations that attempt to teach only a small fraction of their eighteen-year-olds. There are still problems to be solved, but the progress is encouraging. [pg. 310]

SUMMARY AND CONCLUSIONS

This chapter presents an overview of findings from each of the preceding chapters. Instead of recapitulating the results already presented for each information source, the focus will be on examining several major areas of performance and relating appropriate sources of information to these major areas. The chapter has five major sections. The first section is Academic Achievement which covers mathematics, reading/language arts, science, social studies, and art and music achievement. The second major section is Student Characteristics which deals with information in areas such as academic self-concept, peer relations, and career development. A third section summarizes pertinent information about Patterns of Course Taking in Utah schools as well as students' evaluations of their educational experience. A fourth section highlights implications for Educational Reform, and a final section will endeavor to highlight implications for education in the 1980's and beyond.

In general, the material which follows will have already been reviewed in previous sections. In some cases, new information will be introduced to provide additional perspectives on performance trends and their implications.

Academic Achievement

Mathematics. As is true with most of the traditional, academic areas which will be reviewed here, distinct differences have been noted in both state and national results in mathematics based on the level of skills being assessed. Utah's Statewide Educational Assessment results have shown a distinctly positive picture at both grade five and grade eleven in describing the basic skills achievement of Utah students. Mathematics performance of

both fifth and eleventh graders on the Comprehensive Tests of Basic Skills was significantly higher in 1984 than it was ten years earlier and substantially above national norms. Results from a variety of programs including State Assessment, National Assessment, and the ACT, suggest that students in Utah, as well as students nationally, do not demonstrate the same level of competence in intermediate and higher-level math skills (such as algebra and geometry) which is evident in the fundamental areas of mathematics. Another troublesome finding is the fact that Utah males continue to score at much higher levels than females on the ACT mathematics test. Recent analyses of course-taking of Utah senior high students have found significantly lower percentages of Utah's young women electing into courses such as second year algebra and plane geometry. While this does appear to be changing slowly, there is still significant room for improvement.

To review, the performance picture in mathematics is rather positive when considering lower-level mathematics skills of both elementary and secondary students as well as the state's most gifted students. These groups perform consistently better than national comparison groups in programs such as the State Assessment and the Advanced Placement examinations. Conversely, there is considerable evidence that intermediate and higher level mathematics skills are not being acquired to a sufficient degree by typical secondary students in Utah and across the nation. This problem continues to demand serious attention from educators and the public.

Reading/Language Arts. The 1984 Statewide Assessment revealed that scores of Utah fifth and eleventh grade students were much higher than those of the national norm group on the Comprehensive Tests of Basic Skills in reading. This held true for both vocabulary and reading comprehension. A rather disconcerting finding was a decline between 1981 and 1984 in the performance of Utah eleventh graders on this test.

The national picture, as documented by evidence from the National Assessment of Educational Progress, suggests that students across the nation have mastered the basics in reading to a very significant degree. Concern again emerges in examining higher-level skills in reading. The most recent National Assessment of reading showed that 40% of thirteen-year-olds and 16% of seventeen-year-olds did not have intermediate reading skills and strategies, and fewer than 5% of the seventeen-year-olds had acquired advanced reading skills and strategies.

In the content area of English usage, 1984 results from the Statewide Educational Assessment show Utah fifth and eleventh graders performing at much higher levels than national norm groups on the Comprehensive Tests of Basic Skills language usage test. State and national ACT results in English have taken a rather marked upswing beginning with 1984. Utah's average ACT English score in 1984 was, in fact, the highest average obtained by Utah students on this test during a sixteen-year period beginning in 1970.

Results from the Advanced Placement program in English show consistent increases in Utah performance over a twenty-year period. During this same time the scores of national AP English test-takers have remained very stable, but typically at a slightly higher level than that of the Utah group of test-takers.

While writing, as such, has not been directly assessed as part of any statewide study in Utah, the results from national studies, such as the National Assessment of Educational Progress, would indicate that a serious look should be taken at the need to enhance writing instruction. Greater focus would appear to be needed on the structural elements of writing, and students need many more opportunities to produce compositions and receive informed criticism of their work.

The total picture in reading and the other language arts suggests strongly that Utah elementary and secondary students perform very well in the basic skills. Very high percentages of Utah adults can deal with the everyday reading skills necessary to function in society. Considerable national evidence suggests that more emphasis should be placed on helping students acquire advanced skills in both reading comprehension and the use of the English language with particular emphasis on structure and composition.

Science. Evidence from virtually every source reviewed in this report suggests that Utah students perform rather well in the various areas of science. The first Statewide Assessment showed that Utah fifth and eleventh grade students scored at dramatically higher levels than national norm groups on the science test of the Comprehensive Tests of Basic Skills. This same level of superiority is reflected in the performance of Utah high school students on the ACT science test, where the Utah students tested out-performed the national comparison group over nearly twenty years.

The national picture, as documented by the National Assessment of Educational Progress (NAEP), is not as bright. The most recent National Assessment showed that only among NAEP's nine-year-olds were statistically significant gains reported between 1977 and 1982. Thirteen-year-olds showed no significant changes in science performance during these same assessments and national seventeen-year-olds actually did less well in 1982 than four years previous. National Assessment findings suggest that physical rather than biological sciences are the source of weakness in the national test results.

Utah's academically gifted students have shown a very significant trend of growth in their Advanced Placement scores in biology over a twenty-year period. On the AP chemistry test, Utah students have performed at levels

essentially equal to the national comparison group over the last several years.

Overall, science continues to be an area of real strength for Utah students at both the elementary and secondary levels. Efforts should be made to sustain and build on this record and to continue to attract and keep the best available science teachers.

Social Studies. Through 1983, there was great similarity in the performance of Utah high school students and the national sample on the American College Testing program social studies test. In 1984, there was a marked departure from this similarity with Utah students scoring half a standard scale point higher than the previous year, and almost half a point higher than the national comparison group.

National Assessment has measured knowledge, skills, and attitudes in social studies twice. These studies demonstrated very little change in the overall performance of the nation's nine-year-olds with slight declines at the thirteen-year-old level and larger declines for seventeen-year-olds. These results were observed in the mid 1970's.

The American History test in the Advanced Placement program shows a substantial increase in the performance of Utah's academically gifted students since 1966. These most recent AP American History results show a slightly higher percentage of Utah students qualifying than is the case for the more select national group on this test.

Art and Music Achievement. Results from the first three assessments of music achievement in the Statewide Educational Assessment program showed consistent growth for Utah fifth graders between 1975 and 1981. The scores of Utah eleventh graders were also higher in each of the first three assessments. Positive changes were also noted at both grade levels for art

achievement between 1978 and 1981. The most recent Statewide Assessment in 1984, however, using a small sampling of art and music achievement items, showed performance decreases in both art and music achievement at both grade levels. This most recent trend, as well as the absolute levels of performance in both art and music, clearly indicate a need for improvement in these areas. Much the same finding is documented by National Assessment results in art and music, which were not as positive as the Utah profile.

Student Characteristics

This section will feature a summary of findings dealing with certain critical student characteristics other than the academic achievement areas which have just been summarized.

Academic Self-Concept. The Utah Statewide Assessment program has gauged the level of student academic self-concept in all four assessments between 1975 and 1984. For the most recent assessment, student scores for academic self-concept improved significantly at grades five and eleven reaching ten-year highs. Students with high scores on academic self-concept tend to have high scores on other educational outcome measures. Student self-concept was apparently bolstered by teaching practices such as reinforcement of self-concept.

Peer Relations. The profile of results on the peer relations measure from the Statewide Assessment program shows consistent growth over a ten-year period for Utah fifth graders with a ten-year high reached in 1984. Eleventh grade scores stayed essentially the same in 1984 as 1981. Students with high scores on the peer relations measure tended to have higher scores on many other areas as well.

Career Development and Career Awareness. The Statewide Assessment program measures several different aspects of student career development and awareness. These include scales measuring career development experience, career awareness and exploration, as well as independent development. The career development experience scale measures the participation of Utah eleventh graders in school-based career education activities. This measure shows very little change over a ten-year period for Utah eleventh graders. The fact that about one-third of the students tested reported no exposure to career development experience is a definite cause for concern.

Results from the career awareness and exploration scale, which focuses on the extent to which students have considered personal career plans and activities, shows a positive trend from 1975 through 1981, but a moderate decline in 1984. Clearly, there is still considerable room for greater implementation of such career education thrusts as student use of career resource centers, work observation, career-focused parent involvement, and student educational planning.

Educational Aspirations. The pattern of education degree aspirations of Utah college-bound students is somewhat different than the national ACT sample. Utah students tend to be somewhat more interested in pursuing vocational or technical programs than the national sample and less interested in a terminal Bachelor's degree program. The latter is coupled with considerably more interest on the part of Utah students in obtaining graduate level degrees than is observed nationally.

Patterns of Course Taking and Student Evaluations of Their Educational Experience

In a recent modification of the annual survey of Intentions and Accomplishments of Utah High School Seniors, the State Office of Education has

developed the capability of tracking student-reported experiences in selection of courses. Results are now available for both 1984 and 1985 and, in general, show at least moderate increases in the percentage of students taking at least two years of foreign language, mathematics, and science. Increases were also noted in these same areas for the percentage of students taking at least three years of these subjects. An analysis of the specific courses taken by these same groups of seniors shows substantially higher percentages of Utah students taking the intermediate and higher level courses in the math sequence including algebra I and II, geometry, trigonometry and calculus. Higher percentages of Utah seniors were also noted in specific science classes including physics and chemistry, as well as computer science. Yet another area where definite positive trends have been noted is in the honors and Advanced Placement courses where higher percentages of seniors in 1985 than 1984 reported taking classes in areas such as history, English, mathematics, biology, and chemistry.

Student Attitude Toward School and Evaluations of Schooling. Results from the Statewide Assessment program over all four assessments show increasing levels of student enjoyment of school at both grade five and grade eleven.

The Utah 1985 ACT college-bound sample of students evaluated the overall adequacy of their high school education in a considerably more positive fashion than did the national ACT sample. A higher percentage of Utah students rated their high school experience as either "excellent" or "good" than did the national group. This observation was true across secondary preparation areas including business, vocational, college preparation, or students in a general curriculum.

Implications For Educational Reform

While the impact of much of what has been put into place under the umbrella of educational reform must be assessed over a much longer period of time and with more targeted evaluation strategies than the system-wide emphasis which is provided here, there are some important observations which do stem from the information in Quality Indicators.

First, the rather pronounced increases in the performance of Utah high school students on the ACT achievement tests is an important finding. It is highly probable that these performance increases are linked to more rigorous requirements for graduation which have been established at both the state and local levels in Utah, as well as to the higher college entrance admission standards which have been put in place by several colleges and universities in the state. Thus, these higher expectations do appear to be translated into performance increases at both the state and national levels.

Second, a related finding is that Utah high school students are enrolling in greater numbers, than was true previously, in subjects such as intermediate and higher level mathematics, science, and foreign language. There would again appear to be direct linkages between this finding and the higher expectations which have been set for students in the form of new graduation requirements and college admissions standards.

Third, the dramatic increase in the number of Utah students participating in the Advanced Placement program as well as the very substantial performance of the Utah students engaging in this effort is a significant finding. Literally thousands of Utah students are now earning college credit for courses taken in high school and at the same time receiving extremely high quality instruction as a direct result of the Advanced Placement program. This is an example of the finest expression of educational productivity which spans the public and higher education sectors.

As indicated above, many of the aspects of educational reform must be examined in a much more targeted fashion than is possible here. In the next several years the impact of programs such as Utah's career ladder effort, additional efforts at curriculum reform, with the full scale implementation of the K-12 core curriculum, and efforts such as more emphasis on student educational planning all have the potential for influencing many of the performance indicators which are reviewed in the Quality Indicators series. Thus, some aspects of the reform movement have already made measurable differences in the performance of Utah students, while others will, by their very nature have to be in place and fully operational for a period of time before they can reasonably expect to impact the performance of students on measures like those reviewed here.

Implications For Education in the 1980's and Beyond

Preparing for the "Information Society." Recently the Education Commission of the States addressed the matter of how well the schools of the nation are preparing students for the so-called "information society." Certainly the decades of the 1980's and 1990's will be characterized by an increasing focus on information and information technology. A key issue is whether or not our present educational delivery system is responsive to changes currently impacting it and how will it accommodate to the pressures of tomorrow. The Education Commission of the States summarized its examination of these matters with the following statement:

The United States has entered the age of rapid information transmission. Breakthroughs in electronics and communication technology are responsible for this transformation and permit unprecedented industrial restructuring. Structural changes in the labor force characterize an expanding economy, however, and need not threaten economic stability. Thus, by examining the skills needed in tomorrow's labor force, we can better prepare workers for the changing conditions they will encounter.

Other factors significantly related to economic growth are advances in new knowledge and increased education levels of the work force. Occupational growth throughout the 1980's is projected to expand most rapidly in the higher skilled technical occupations. Tomorrow's workers will likely need improved skills in the selection and communication of information. Many of today's skills considered to be of a "higher" level are the potential basic skills of tomorrow. Attention given only to the minimum competencies, as currently defined, shows a lack of foresight and leaves many students without adequate preparation for future learning and employability. The National Assessment of Educational Progress (NAEP) surveys the knowledge, skills, and attitudes of the nation's seventeen-year-old students. Survey results indicate that today's minimum skills are demonstrated successfully by a majority of students. Higher-order skills, however, are achieved only by a minority of seventeen-year-olds, and this proportion declined over the past decade. If this trend continues, as many as two million students may graduate in 1990 without the skills necessary for employment in tomorrow's market place. Many efforts are already underway to promote higher standards of educational achievement. Future actions must include long-range planning in the following areas:

- ° An increased awareness of the contribution of human resources to economic productivity.
- ° An understanding of the diverse needs of tomorrow's students and of workers displaced by technological changes.
- ° Improved education/industry partnerships to maintain relevant goals in education.
- ° Re-evaluation processes of essential employment skills.
- ° Improved curricula that incorporate future requirements and instruction in higher order skills. [pgs. 1-2]

The above stated observations on national implications have equal relevance for the state of Utah. In fact, several of these observations are central in the Utah reform effort.

The long-term decline in ACT college entrance scores, which characterized both national and state performance during the decade of the 1970's, suggested the need for programs which stressed appropriate preparation for each student and renewed emphasis on intermediate and higher-level skills for college-bound students. The answer would seem not to be unrealistically high

standards imposed on all students regardless of their capabilities or educational intentions. What is called for is the intelligent tailoring of programs for students based on their needs. A more rigorous program, including higher standards, would seem to offer the greatest postsecondary opportunities for students who are not certain of their post-high school direction. Utah's new graduation requirements strongly reflect this emphasis.

The advent of an information society carries with it the strong need for the preparation of a large segment of the work force skilled in mathematics, science, and technology. An Education Commission of the States report cites the work of the National Science Board's Commission on Pre-College Education in defining three major tasks that the educational system must address in these areas:

1. Generate a sufficiently large pool of well-prepared and motivated students to pursue professional careers in science and engineering;
2. Provide a range of high quality educational opportunities that are sufficiently broad and flexible to prepare a wide spectrum of students for careers in technically-oriented occupations and professions; and
3. Raise the general science and technology literacy level of all students to prepare them better to live in the society of today and tomorrow, regardless of what careers they elect to pursue (National Science Board, 1982). [ECS pg.44]

Implementation of the Research on Effective Schools. A growing body of research information exists which provides the basis for improving elementary and secondary education and is based on school effectiveness research over the past several years. Michael Cohen (1982) of the National Institute of Education offers the following synopsis of this body of information:

This large collection of research findings holds great promise for the improvement of the nation's schools. If state and local leaders are willing to examine the concepts, theories, and frameworks inherent in the research, then to apply them -- carefully tailored to fit state and local circumstances -- schools will surely be on the road to becoming more effective. The research does not promise "overnight cures"; it only offers some grounds for optimism. [pg. 6]

Utah has initiated a number of efforts which are congruent with the research on effective schools. The entire effort in implementing an objectives-based core curriculum is very much in harmony with the findings of the effective schools research. The State Office of Education has also prepared an extensive report entitled "Research Resources Dealing With the Effective Schools Literature - Classroom Processes." This compendium presents an analysis of eleven classroom processes which have proven to be effective in enhancing academic achievement. It also identifies resources and techniques which would be useful to teachers in implementing such processes. The areas identified in the study are the following:

- ° Academic Expectations
- ° Academic Learning Time
- ° Classroom Management
- ° Curricular Congruence
- ° Direct Teaching/Instruction
- ° Monitoring of Student Progress and Evaluative Feedback
- ° Homework
- ° Parents Academic Involvement With Their Own Children
- ° Reinforcement of Self-Concept
- ° Rewards for Achievement
- ° Teacher Questioning Practices

Higher implementation of the processes identified in this research and listed above holds great potential for improvement of the academic performance of Utah students.

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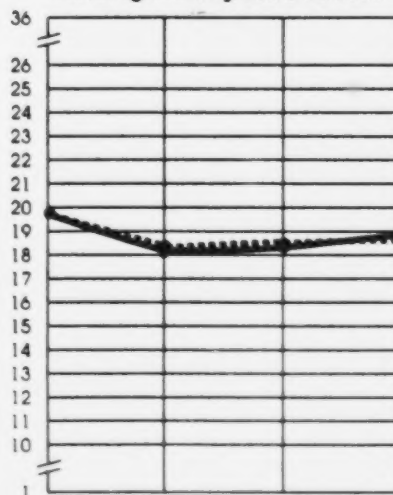
- (1) American College Testing Program, Student Profile Reports.
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- (8) Utah State Office of Education "How Good Are Utah Public Schools" Report Series, 1967, 1971, 1974, 1979, and 1983.
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- (10) Utah State Office of Education, Survey of the Intentions and Accomplishments of Utah High School Seniors, 1984 and 1985.

APPENDIX A

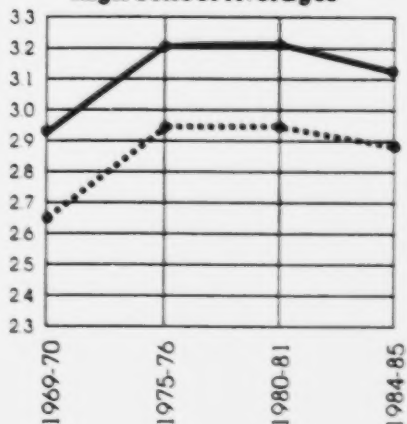
Utah

Trends in ACT Assessment Scores and High School Averages 1969-70 - 1984-85¹

ACT Assessment
Average Composite Scores



High School Averages²

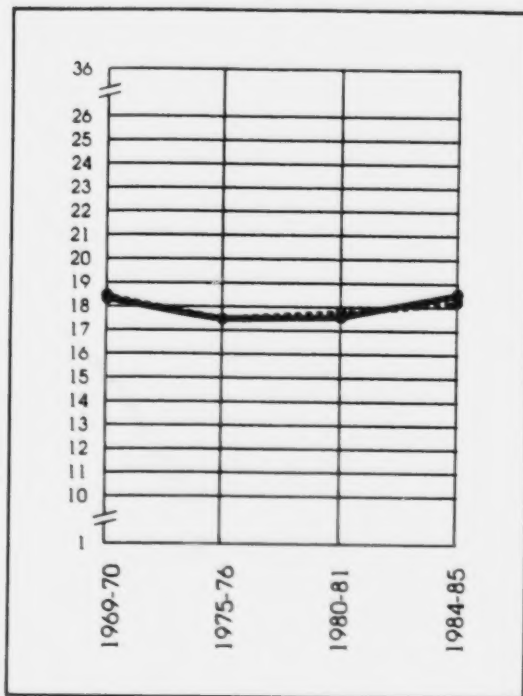


National
Utah ———

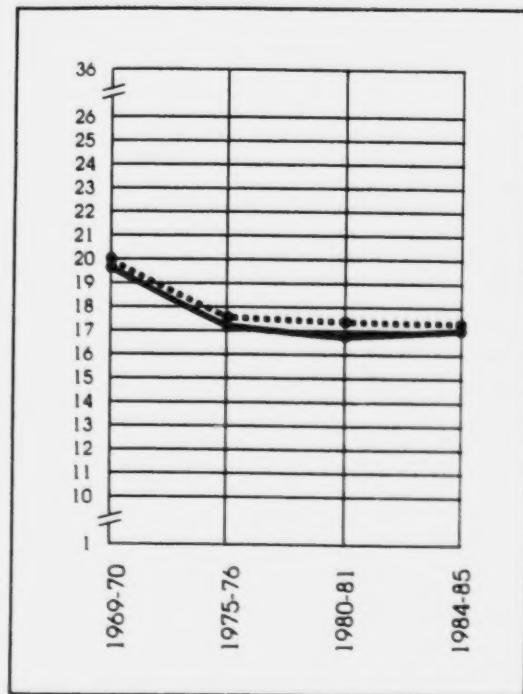
For each year through 1983-84, the information in these graphs has been based on the performance of students who tested on national test dates during that year. Beginning with the 1984-85 school year, these data will be based on the performance of students who tested on national test dates and graduated in the spring of the given year. Standard score scale range for the ACT Assessment is 1-36.

²The mean of four subject area grades students report when they register for the ACT Assessment.

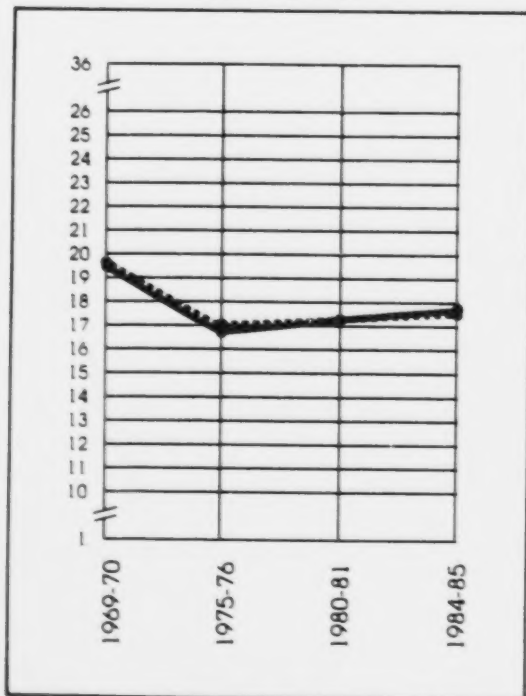
English



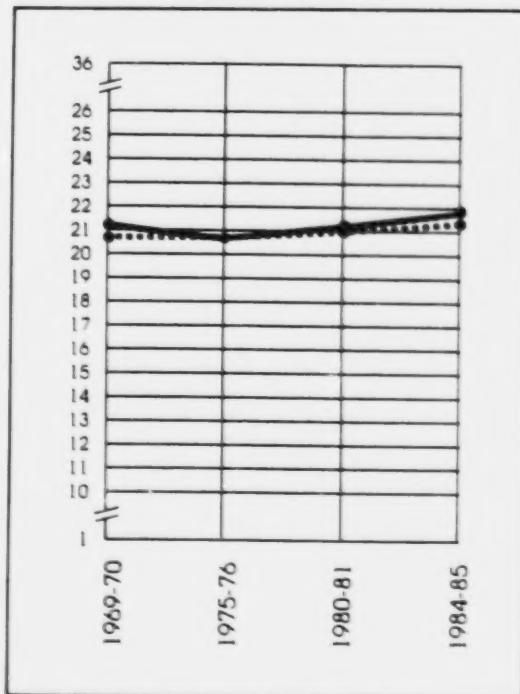
Mathematics



Social Studies



Natural Sciences



National
Utah ———